

PRACTICAL TALKS
ON THE
CARE OF CHILDREN

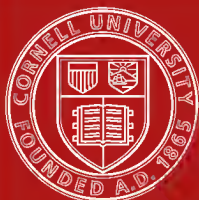
MARY E. BAYLEY, R.N.

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**PRACTICAL TALKS
ON THE
CARE OF CHILDREN**

PRACTICAL TALKS ON THE CARE OF CHILDREN

BY
MARY E. BAYLEY, R.N.

WITH AN INTRODUCTION BY
VIRGIL P. GIBNEY, M.D.



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To The Memory of
E. L. H.
the chief inspiration of this work
This Book is Inscribed
in loving appreciation

myself of the opportunity to acknowledge the interest and assistance of these physicians. Particularly, do I wish to thank Doctor Charles Hendee Smith for his cheerfully given advice and assistance in preparing the chapter, "Diet Schedules and Food Formulas," and for his preparation in full of the chapter "How to Make a Formula."

I am also under deep obligation to my friend, Mrs. William Brown Meloney, for her kindly encouragement and helpful suggestions.

The frontispiece is the work of Mr. Emil Fuchs, the noted sculptor and artist. To Mr. Fuchs I extend my thanks and appreciation for his generous permission to use it.

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INTRODUCTION

BY DR. VIRGIL P. GIBNEY

A STATEMENT made not long ago by the Bureau of Education of the United States Department of the Interior revealed the fact that about fifteen million school children in this country were suffering from some physical defect which in infancy could have been prevented or corrected. This report further set forth that of these fifteen million handicapped children six million were malnourished.

These statements considered in connection with other well known facts bearing upon the yearly infant mortality rate, the increasing mortality rates relative to childbirth and the all important relation of health in later life to the habits of childhood, bring strikingly before one the need for more and more education.

Having been an eye-witness of many of the wonderful achievements of science, I heartily welcome every contribution in the present, rapidly growing movement for the prevention of disease. We have learned that the most effective method of coping with disease is to prevent its occurrence or at least to bring treatment to bear in its earliest stages. And nowhere are the benefits of these teachings more strikingly illustrated than in connection with the child.

When one considers the countless questions a mother or a prospective mother asks the family physician, and his difficulty in many instances in giving a satisfactory explanation, no excuse need be offered for the appearance of a volume which covers the ground so fully and so lucidly as does the "Practical Talks on the Care of Children."

A glance at the table of contents will convince one, whether layman or physician, that the author has aimed to answer every possible question that concerns the welfare of the child.

Text-books by eminent physicians in every specialty require very little advertising to ensure a wide circulation. They are confined not alone to medical libraries but may be found in many homes throughout the land. With rare exceptions, however, these books are couched in technical terms and few mothers obtain the information they desire.

In safeguarding the health of the children, the physician's greatest ally is the professional nurse, not only the nurse called in after illness (to aid in restoring health) but the nurse, who with the ability to impart her knowledge, becomes the mother's teacher, thus giving constructive assistance toward the making of that most valuable of all allies—the trained mother.

While the physician and the nurse each have their respective fields, these must be coördinated. In this series of articles, which before their publication in leading magazines, were passed upon by prominent

specialists, the ideas are complimentary and supplementary to the more technical viewpoint of the physician. The author has not only treated the subjects in a simple, straightforward manner, but while grasping their scientific significance, she has with delightful simplicity made them easy of comprehension to anyone.

And now let us take a glance at some of the chapter headings which indicate the progress which has been made during the last ten or fifteen years:—

First (and perhaps I see this first, because it concerns my own speciality) is the chapter "The Care of Children's Feet." A comparatively few years ago it was not unusual to see small children with steel braces attached to their shoes for the relief apparently of weak ankles. In addition to other things, we have learned since then that it is very seldom, indeed, that steel apparatus is necessary. We have learned to regard the development of certain muscles on the inner side of the leg and ankle as of paramount importance in the relief of this ailment in older children; we have learned that if proper care is given to the question of nutrition in infancy, to the proper time when the child should begin walking, to correct dress of the feet and to the correction of wrong habits of muscular action in standing and walking, while the muscular system is immature, many of the foot distortions in later life with their trail of bodily ailments can be avoided. Indeed, if all parents would but grasp the full signifi-

cance of the relation of the feet to health, as Miss Bayley has explained it in this chapter, this alone would make the appearance of this volume well worth while.

"Tuberculosis and the Child" and "Posture the Foundation of a Child's Health," coming as they do within my line of endeavor, also particularly attract my attention. While with Tuberculosis we have not developed any new scientific method for its treatment, we have learned the great importance of early diagnosis and we have become more cognizant of the relation of the infectious diseases (particularly whooping-cough and measles) as an exciting cause for a tubercular joint.

So much have we learned within the last few years about the relation of posture to health, it would be difficult to give a clear outline here. The importance of the question is now so well recognized, there are physicians to-day who are devoting their entire time to this specialty.

Further perusing these chapter headings we find "Fears of Childhood," "Factors Influencing the Nervous Health of Children," "Now for Healthy Hearts" and "Speech Defects" all of them dealing with comparatively new developments in the field of Child Welfare. The first two subjects come within the scope of Mental Hygiene. This term while sounding perhaps cold and formal, really represents simple, common-sense principles dealing with environmental conditions, the emotions and general personality of the child.

Mental Hygiene and its application to the child, while to a large extent long neglected, has within the last few years been made the subject of profound scientific study, and while its scope is still being developed, psychologists, educators and those who have made a study of child life, recognize that while throughout childhood attention should be given to Mental Hygiene, its value during the first seven years of life from the standpoint of habit formation, health, education and morals, cannot be overestimated. These two chapters, "Fears of Childhood" and "Factors Influencing the Nervous Health of Children," are worthy of study by all parents. The author has handled them deftly, bringing forcibly before the mother that habits of mind must be formed with at least the care given to table manners and social graces, and that in so doing, after all, the very simple things are the essential things.

Since 1916 when examinations of school children disclosed that from one and one-half to two per cent. of all school children examined showed some heart defect, the movement for the prevention of heart disease among children has been the subject of serious endeavor. Begun in New York City by the establishment of an association for the Prevention and Relief of Heart Disease, the movement spread rapidly to other cities and up to January, 1921, special cardiac clinics had been established in thirteen other cities. In the chapter "Now for Healthy Hearts" the author has set forth in addition to the known causes for heart

disease among children, the most direct and effective measures from the standpoint of the mother, for prevention.

The necessity for the prevention and early correction of speech defects has since the war received new impetus. For it has been shown that not only were ten per cent. of those applying for commissions rejected because of poor articulation but also that men with well developed speech centers were less liable to shell shock. In other words, when the speech centers were well developed, the tendency to neurasthenia was lessened.

The correction of speech defects, a field so long attracting charlatans, has within the last few years been made the subject of much scientific study. In the chapter which Miss Bayley has devoted to this, the subject has been handled from the standpoint of prevention, that is, the early correction by the mother of those tendencies in childhood, which if allowed to develop may be the cause of much suffering both mental and physical in later life.

The immunization of children against Diphtheria as described in the chapter "The Prevention of Diphtheria" is an entirely new development in the field of medical science. This is of particular educational value to the mother, in that it makes clear to her the great necessity of coöperation with physicians (either in the home or school) in the elimination of this disease, having among children from one to five years of age

almost as great a mortality as from measles and scarlet fever combined.

Infantile Paralysis, a disease not becoming a serious problem in America until the pandemic of 1907, is a subject on which we as yet know comparatively little. And yet through the subtle channels of recent bacteriological research methods, some definite conclusions have been reached. The two chapters which the author has devoted to this subject give not only a concise history but the best known methods of prevention. And since the elimination of epidemics of Infantile Paralysis (with our now limited knowledge) is a problem practically as much social as medical, these chapters are worthy of serious study by all parents.

While in going over these chapter headings my eye was first attracted to those subjects mentioned in the foregoing, this in no way precludes the value and importance of the others. As I note the subject "The Prospective Mother," I am reminded again of that report by the U. S. Department of Labor, Children's Bureau, that in our country in 1919, seventeen thousand, eight hundred mothers lost their lives from conditions caused by childbirth and that in a list of seventeen countries, the United States ranks seventeenth respecting maternal mortality. Needless to say that in addition to the establishment in every community of better facilities for the medical and nursing care of the mothers, there is yet need for the dissemination of

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CHAPTER I

THE PROSPECTIVE MOTHER

THE woman who realizes for the first time that a little life is dependent upon her stability for its future, should first of all succeed in making it welcome in her heart. For not only is there intimate physical union between mother and child, but undoubtedly mental and spiritual union.

The thought of motherhood—life's greatest blessing—should cause no fear. Even the most intelligent women scarcely know what wonderful things have been done within the last fifty years to make motherhood safe.

To the prospective mother, mental hygiene is quite as important as physical. So from the very first, she should do everything to insure for herself quiet of mind and freedom from anxiety. A restless, dissatisfied woman cannot expect a child with a cheery, optimistic disposition.

From the very first, dismiss from the mind all thought of "maternal impressions," or, in other words, that it is possible to deform the child by something one

may see or hear. For scientists have long ago agreed there is no foundation whatever for this belief. These conclusions are supported by scientific facts. One of these being the two separate and distinct circulations. That is, the only communication between the mother and unborn child is an interchange of the materials of nutrition and excretion through the placenta. The food which the developing child needs is, by processes not clearly understood, extracted from the maternal blood and the waste products resulting from the child's growth are taken up by the maternal circulation and disposed of with those of the mother. This means, that since the mother's blood never enters the child, there is not, so far as known, any connection by which nervous impressions could be conveyed, even were it possible to convey them by means of the blood. On the other hand, it would seem that Nature has specially provided this barrier between mother and child as a protection from such injuries. There is, however, a way the mother may injure the child. That is, when she fails to order her life so as to endow the little one with a well nourished body and a stable nervous system.

The expectant mother should at all times have medical supervision. As soon as the fact of pregnancy has become established, she should at once place herself in touch with a good medical practitioner, and remain under his care throughout the term.

Pregnancy manifests itself, first, by probable and

later by positive signs. The probable signs are:—

Cessation of menstruation
Changes in the breasts
Morning sickness
Disturbances in urination

These are called probable signs because other causes may operate to produce them and they are, therefore, not infallible.

The first of these signs (cessation of menstruation) is usually very significant, especially if there has been no previous irregularity. If this occurs twice in succession, particularly in connection with the other signs, the condition of pregnancy may be definitely conceded.

Changes in the breasts may be noted within a few weeks, such as:—

Tenderness upon pressure, enlargement, darkening of the areolae (colored ring around the nipple) and a throbbing sensation, caused by distension of the superficial veins.

Nausea (usually upon arising in the morning) while apparent in at least one-half of all cases, is particularly noticeable in the first pregnancy. This generally has its beginning about the time of the cessation of the first period and ends around the third month.

Urinary disturbances may at first be troublesome. They are caused chiefly by pressure of the growing uterus against the bladder. These symptoms disappear during the fourth month, since at this time the uterus assumes a higher level in the pelvis. They may,

however, reappear during the ninth month when the uterus again begins to sink.

Between the eighteenth and twentieth week "quickening" or motion of the fetus may be felt by the mother. About this time also the physician upon listening with the stethoscope can distinctly hear the beating of the fetal heart. These are the earliest *positive* signs of pregnancy.

The average duration of pregnancy is about two hundred and seventy-three to two hundred and eighty days or a little over nine months. There is no absolutely accurate way of computing the exact date of confinement. But the method considered most accurate is to count forward two hundred and eighty days from the date of appearance of the last menses. Or what is simpler and amounts to the same thing, count back three calendar months from the beginning of the last period and add seven days. This will give the month and approximate day. In first pregnancies labor may begin a week earlier and in others may occur later than this period.

It is very important that the urine be frequently examined. This should be done once a month during the first half and twice a month during the second half of pregnancy. When collecting urine for examination, the quantity passed in twenty-four hours should be measured. If the amount is less than one quart or if the urine has a darkened color and shows sediment, you will need to drink more water. Conditions such

as these are generally due to a too concentrated urine. They are, however, the only conclusions that can be drawn from its appearance. For the important abnormal constituents—albumin and sugar—make known their presence only in response to specific chemical tests. When collecting a twenty-four hour specimen:

Select a vessel with a cover and scald it thoroughly, then at some convenient hour, say 9 A.M., empty the bladder, throwing away this specimen. After this void into the vessel each time up to and including 9 A.M. the next day, in the meantime keeping the vessel closely covered. For a specimen fill a perfectly clean small bottle (about 6 ounces), cork tightly, label, "twenty-four hour specimen" with your name, the date, the amount of urine passed in 24 hours and send at once to your physician.

Any unnatural condition such as:

Swelling of the hands or wrists, puffiness under the eyes, dizziness, blurring of the vision, repeated headaches, muscular twitching or paroxysmal pains, especially about the pit of the stomach, should be brought to the attention of the physician. They may or may not indicate the presence of serious toxæmia. But it is most important that all such symptoms be observed and reported. For it is only by this means and frequent examination of the urine, that the physician is enabled to know if there are indications of toxemia. And what is toxemia?

It is a poisoned state of the blood. As the child develops in the uterus, waste materials are constantly being thrown back into the mother's blood. And if her nutritional processes should be so imperfect as to make the elimination of these difficult, a condition more or less serious to both mother and child arises. This is called toxemia. If discovered in time, it may, by prompt treatment, be arrested.

Exercise in the open air should be taken for at least two hours daily. In pleasant weather, walking is a valuable form of exercise. When weather conditions do not permit going out, one should try at least to walk on the porch. Near the end of pregnancy when walking becomes fatiguing, one should sit as much as possible in the open air. Violent exercise should always be avoided. And particular care should be taken not to become over-tired. This especially applies to the last two or three months, as the nearer the end of the term is reached, the more work the heart is called upon to do.

It is common for expectant mothers to tire easily, particularly during the early months. Take fully eight hours of sleep in a well ventilated room and rest for an hour or two during the day.

During pregnancy the health of a woman should improve. She is usually better able to utilize her food. Take a normal, liberal mixed diet, avoiding all food known to cause distress, because of indigestion. While there is no need for the diet to differ materially

from that to which one has become accustomed, it should be remembered that one of the most subtle causes of ill health at this time is malnutrition, due to lack of eating good nourishing food. An ideal diet consists of a small proportion of meat (once a day is usually sufficient), a generous allowance of easily digested vegetables and fresh fruits. Liquids, since they aid the kidneys, the bowels and the skin to throw off waste products, are particularly essential. About three quarts should be taken daily. Of this amount the larger part should be water, the remaining portion being made up of milk, cocoa, soups and (if desired) a moderate amount of tea and coffee. During pregnancy, if frequent small meals are taken, rather than three heavy ones, much discomfort may be avoided. Toward the end of pregnancy there will be an increased demand for heat and energy giving foods. For it is during the last eight weeks that the child gains half its weight. This increased demand should be supplied by the addition of milk to the usual diet. This should be taken between meals and at bedtime to avoid overloading the stomach and decreasing the appetite for other food.

The decay of the teeth of the pregnant woman is largely due to the lack of lime and phosphorus in the diet. So too much emphasis cannot be put upon the necessity of a diet rich in minerals. Otherwise Nature robs the mother of her own supply to give to the child. Minerals are found in green vegetables, fresh

fruits and in cereals made from undenatured food products. The teeth should have a thorough examination and be put in perfect order as soon as pregnancy has been established. Use an alkaline mouth wash daily such as milk of magnesia or soda bicarb. (See Chapter II for further information on the teeth.)

There is no more important consideration than to keep the bowels carefully regulated, lest congestive troubles, both functional and organic, should supervene. Constipation is a common condition at this time. Fully ninety-five out of every hundred prospective mothers have to resort to some artificial means. The diet should include an abundance of fresh or cooked fruits for their laxative effect, and if vegetables are eaten with olive oil this will also have a laxative effect. Graham and whole wheat bread, bran bread and corn bread, due to their coarseness, have a stimulating effect upon the intestines and for this reason, if there is a tendency to constipation, are very beneficial. If dietary measures are not efficacious senna prunes are a simple, effective and harmless remedy. To prepare:—Place in a covered jar an ounce of senna leaves, pouring over them a quart of boiling water. After they have stood from two to three hours, strain and throw away the leaves, leaving the clear liquid. To this add a pound of well washed prunes. Allow the prunes to soak in the liquid over night. In the morning, cook them slowly in the same liquid until one-half of the liquid has boiled away and the prunes

are tender. A pint of water should then be added and the mixture sweetened with two tablespoonfuls of sugar, preferably brown sugar. Begin with half a dozen of the prunes with some of the syrup at the evening meal. They may then be increased or decreased as required. The syrup has a stronger laxative effect than the prunes.

Drink plenty of water so the kidneys will act freely, as poisons are thus eliminated from the body. Take a daily tepid bath, but never a hot one. Do not allow the skin to become too chilled, as poisons are being constantly thrown off through the skin, and chilling makes it non-active, causing toxemia. In fact, free perspiration is one of Nature's most important safeguards against complications, since it relieves the work of the kidneys, thus aiding them in maintaining healthful activity.

Should there be edema (swelling with fluid) of the feet and legs, it is wise to call this to the attention of the physician. Such a condition should, however, cause no alarm. For it is usually caused by pressure from the enlarged uterus obstructing the returning venous blood. This swelling is often reduced by sitting down as much as possible with the feet on a level with the hips.

Varicose veins are also an indication that one should as much as possible keep off the feet. If very troublesome, it may be necessary to bandage the legs with a thin flannel bandage before rising.

When the baby arrives, his most urgent need will be that the mother should, during the early months of life, nurse him. In preparation for this the nipples must have some care. About two months before the expected date of confinement begin to harden the nipples by bathing with a saturated solution of boric acid and fifty per cent. alcohol, or by scrubbing thoroughly, night and morning with a coarse wash cloth and rubbing with lanolin. After applying the lanolin, cover with old linen to prevent soiling the clothing. Toward the end of pregnancy the breasts should be softened with a little vaseline each day and if the nipples are retracted gentle traction and manipulation should be made. This is done by grasping the nipple between the thumb and finger, drawing it out and allowing it to contract, doing this over and over two or three times daily. Do not bind the breasts with corsets or clothing. Do not wear tight bandages of any kind.

It is from the first month to the middle of the fourth that a miscarriage is most likely to occur. During the first sixteen or eighteen weeks extreme care is necessary at the normal menstrual periods. One should avoid lifting heavy things, running up and down stairs, running a sewing machine, over fatigue and very hot baths. In case of vaginal bleeding or abdominal pain, go to bed at once, keep absolutely quiet and call a physician.

A douche should never be taken during pregnancy except under the advice of a physician.

The ordinary type of corset can be worn until the beginning of the fourth month, when a regular maternity corset should be adopted. This corset should be cut so as to give good support to the abdomen and prevent sagging. Such a corset usually has three lacings, one in the back and one over either hip. A piece of elastic about two inches wide is incorporated into the full length of the corset on either side of the two front steels. The steels are more flexible than in the ordinary corset. This corset is ordered to fit the figure and is adjusted by the side lacings as the requirements demand. There are a number of good maternity corsets on the market most of them made after this type. In ordering such a corset, if at the fourth month, take the natural waist measure at that time for the size. Ordered at three months or less, the size would be two inches less than the waist measure.

Since there is hardly anything more disturbing to nervous equilibrium than painful feet, shoes are an important factor to consider. It should be remembered that the body is larger and heavier and toward the end of pregnancy the feet may be swollen. For this reason the shoes should be larger than usual, and since high heels increase the risk of turning the ankle, tripping or falling, they should not be worn during pregnancy. The tendency of high heels to throw un-

due pressure on the lower part of the abdomen, already under a strain, is another reason for discarding them during pregnancy.

It is possible to have maternity clothing which is not only healthful, but comfortable, pleasing to the eye and inconspicuous, so the prospective mother need not deny herself the pleasure of going among her friends.

The dresses should be cut with the line from the shoulder to the waist line in front, quite a little longer than the line in the back. This extra length of the waist line in front, which can be made to form a blouse effect, will prevent the dress from becoming shorter in front as pregnancy advances. Such a dress should be gathered in at the waist on an inside elastic belt. Added draperies have a graceful effect. If hung from the shoulders and designed properly such a dress will adjust itself to the increasing size of the figure. Each maternity dress should have a drop skirt. Aside from the house dresses the wardrobe should contain at least:

- 2 well cut dresses, preferably made of some soft clinging material.
- 2 negligees, made empire style.
- 1 wrap, which combines loose coat and cape lines.

Maternity raiment is made by many prominent firms and may, by merely stating the size usually worn, be ordered by mail. Union underwear should be worn with or without sleeves according to the climate.

The length of time one should remain in bed after the birth of a child is a question which has given rise to much discussion. While there are some advocates of a shorter or longer period, the majority of obstetricians advise at least ten days. The reasons for this may not have a bearing on one's general condition, that is, upon whether or not one feels able to be up and about, they relate more especially to the organic changes in process. While the ill effects of assuming one's duties too soon are not always immediately apparent, they lead all too often to operations in later life, especially is this true when one has failed to exercise a degree of prudence after the birth of the first child.

Do not use any kind of abdominal binder for at least two weeks after the birth of the baby. A binder worn too early may cause a retroflexed uterus (bent or turned backward). After two weeks a binder may be worn, if desired.

The uterus does not return to its normal state for at least five or six weeks and until after this period active exercise should not be taken.

WHAT TO PREPARE FOR A HOME CONFINEMENT

WHILE the wishes of individual doctors vary, the following articles will meet the usual needs of a home confinement:—

Slop-jar or enamel bucket with cover

Three basins and two or three agate quart pitchers
A douche-pan
One and one half yards of rubber sheeting or oil-cloth a yard wide
A two quart fountain syringe
A stiff nail-brush
A medicine glass, medicine dropper and bent glass drinking-tube
Bichloride of mercury tablets (one small bottle)
Chloroform (one small bottle)
Boric acid powder or crystals
Green soap, three to four ounces
Castile Soap
One pint of grain alcohol
One jar of white vaseline
Safety pins
Fluid extract of ergot (one ounce) bought one week before confinement
Plenty of hot water and cold sterile water (boiled water) at time of confinement
Towels, sheets, pillow-cases and night-dresses

It is now possible to obtain from some department stores, complete obstetrical outfits, sterilized and ready for use. The outfit, is, of course, less expensive if made at home. It should contain:—

Five or six dozen sanitary pads, ten inches long by four inches wide. These are made of gauze and cotton. The pads should be about an inch thick. It will be more economical to use cotton batting for the greater part of each one, facing one side with a layer of absorbent cotton. The gauze should be cut wide enough to fold over the cotton, turning in the edges and long enough to extend two or three inches beyond it at each end.

Two delivery pads, one yard square and four inches thick, made of gauze, and cotton batting or waste. Cotton batting may form the principal part of the thickness, but the top layer of absorbent cotton should be a least one inch thick. Less cotton will be necessary if newspapers (several thicknesses) are used for the bottom layer. The pads should be quilted or tacked at several points and each one should be wrapped separately.

Four dozen gauze sponges. These are made by folding gauze, so it may be cut into fifteen inch lengths, the width of the gauze. The raw edges are then folded down about two and a half inches. The strip is then doubled by putting the selvage edges together. Fold this into thirds both ways, then turn the sponge inside out, so as to have all raw edges inside.

Two or three dozen gauze squares. Gauze squares are simply four inch squares of gauze.

Four or five dozen cotton pledgets. Cotton pledgets are wads of absorbent cotton, the size of a small egg, with the ends of the cotton twisted at the top.

These should be placed in a small bag.

Two sanitary belts

Two yards of narrow tape or cotton bobbin, cut into nine inch lengths, to be used in tying the cord. Prepare six of these.

One dozen towels and two old sheets

Obstetrical leggings are very nice to have but not absolutely necessary. They are made of canton flannel cut somewhat like a stocking, except they are cut to fit very loosely and should reach to the hip. If cut so as to extend to the waist at the sides, they may be held in place by a band made of stout muslin. They will in this way prevent unnecessary exposure without interfering with the

doctor. If obstetrical leggings are used they should be sterilized with the other articles.

The dressings should be wrapped in unbleached muslin, each lot in a separate package. Pins should be used to secure the packages, but the points should not be exposed, only the heads of the pins. While the dressings may be sterilized by baking in the oven, steaming is a much more effective method. A small wash boiler about one third full of water makes a good receptacle for this purpose. Secure the dressings into an old sheet fashioned into a hammock, securing each end to the boiler handles. The center of the hammock should extend into the boiler less than one half way. Cover should be applied to the boiler and the dressings allowed to steam over the boiling water for about an hour. They should then be placed in the sun to dry or in the oven, with door open. After twenty-four hours the dressings should be steamed a second time, dried as in the first instance, then placed in a tightly covered box.

LAYETTE

Three abdominal bands, 6 to 8 inches wide and 20 inches long, soft flannel strips unhemmed.

Three silk and wool or cotton and wool shirts (not all wool). Shirts come in four weights and several sizes. It is well to begin with the second size as the first is soon outgrown. The shirts should be high neck and long sleeves (lighter weight for a summer infant). They should open all the way down in front.

Four flannel skirts, "Gertrude" style. That is with button and button-hole on each shoulder. This type of garment prevents unnecessary handling of the child.

Eight white slips, 28 inches shoulder to hem. These should be made of some very soft material, such as, cambric, nainsook, long cloth or batiste.

Five dozen cotton diapers (second size). These should be made of "bird's eye."

Three pairs of socks, if in summer; three pairs of long white merino stockings, if the weather is cold.

Three night gowns or wrappers of outing flannel. Challis, nun's veiling, cashmere, henrietta cloth, or any other light soft material may be used for this purpose. Stockinette also makes a very satisfactory night gown.

Cloak (Baby Bunting coat and hood in one) if in winter, baby blanket, cap, carriage blanket of crocheted or knitted wool.

Three knitted bands, with shoulder straps, part wool. These should be used in place of the flannel bands after first few weeks.

The coat for a Summer baby may be made from some light weight material like cashmere or from silk and wool material. This may be used in the Fall, with a warm lining under it, until it is time for the heavier Winter coat.

THE BABY'S BASKET

This should contain an old soft clean shawl or blanket—to receive the baby at birth.

A package of nickel plated safety pins, three sizes.

A roll of sterile gauze.

Squares of old linen, to be thrown away after using.

Absorbent cotton.

Cake of Castile Soap.

Two ounces of boric acid.

Four ounce bottle of olive oil or sweet oil.

Talcum powder.

Hot water bag with flannel cover.

Infant's soft hair brush.

Jar of white vaseline.

A small pair of scissors with rounded ends.

A package of wooden toothpicks.

A bath thermometer.

Six of the best baby towels.

A white eiderdown blanket, one and one half yards long.

CHAPTER II

MOTHER'S TEETH BEFORE THE BABY COMES

THAT the prospective mother must expect to lose a tooth or more for each child is a fallacy which has been slow to hide away into the shadows of the past. Why has it been so difficult to banish this belief?

Because during pregnancy the teeth are more susceptible to decay, and many women do lose some of their teeth at this time.

This susceptibility is thought to be explained by:

1. The demand Nature makes upon the system for lime salts needed in building the child's skeleton.
2. The acidity of the saliva, caused by the regurgitation of the acid contents of the stomach. This reason is probably the most plausible, especially if there has been much nausea during the first three months.

Trouble with the teeth during pregnancy is not, however, a natural condition. It may be avoided by giving them the proper care.

As soon as conception is known, every woman should begin to take the most painstaking care of her teeth. She should at once visit a good dentist, have her teeth cleaned and necessary repairs made. If dental work is done early in pregnancy, and the dentist is

told of the woman's condition, there is no reason to suppose it can cause any ill effects. The only element of danger that exists is the possibility of a shock sufficient to cause a miscarriage. When the dentist is told of the condition, even this danger does not exist, as he will not then undertake any painful or extensive work.

There still exists among some the old superstition that dental care to the prospective mother may produce birthmarks upon the child, especially that it may cause what is known as a cleft palate. When the cleft palate does occur, it is due to non-union of the superior maxillary bones, and occurs during the second month of pregnancy; it has no connection whatever with the theory of what is known as "maternal impressions."

Furthermore, aside from the fact that scientists have now practically agreed that there is no basis whatever for any belief in "maternal impressions," fetal development is too far advanced before the mother is even aware of her condition for any dental care to affect the developing child.

On the other hand, the harm resulting from a neglected mouth can hardly be estimated. Not only may some of the teeth be lost, but the septic materials harbored are a constant source of infection to the mother, and symptoms of the gravest and most diversified character may arise. In some instances the poisons taken into the system from a diseased mouth seriously

interfere with the nutrition of the fetus. Since the first teeth begin to calcify about the seventeenth week of pregnancy, and the first permanent molars begin to form a few weeks later, poor fetal development may result in a poor grade of teeth which will always be a handicap to the child; furthermore, long persistent sources of infection such as decayed teeth, root abscesses and diseased gums, militate against successful nursing of the child.

Writing on "Dental Diseases in Nursing Woman," in the *Lancet*, Dr. Harold Waller points out that from experience with two hundred nursing women with dental disease, he found in many instances that infants who were backward in development at once began to gain normally when the mother's mouth-infection had been cleared up.

After the prospective mother has had her teeth put into condition by the dentist, she should be careful to use dental floss and to wash them after each meal and before retiring; she should also rinse the mouth with some alkaline wash after each attack of vomiting or eructation of gas. A teaspoonful of milk of magnesia or a half-teaspoonful of baking-soda dissolved in a glass of water, makes an excellent alkaline wash.

After the tooth-brush has been used, it should be soaked in alcohol for a few minutes for cleansing purposes and then rinsed. It is better to have two brushes, using first one and then the other. If the gums bleed while brushing the teeth, do not let this

deter you. The brushing will not injure them. If the gums are massaged with the finger-tips once or twice a day, using the thumb and forefinger, rubbing toward the cutting edge of the tooth, it will have a stimulating effect and will aid in returning them to health. Should the bleeding continue, it would be well to ask your doctor or dentist for an astringent mouth-wash. Healthy gums are always hard, and cling very closely to the teeth.

As the circulation is always sluggish during pregnancy, the gums are apt to be poorly nourished, making this period one of the most susceptible for the development of pyorrhea, sometimes called "Riggs' Disease." An unclean mouth is the very first stage of pyorrhea. Unless the teeth are carefully brushed, the food which clings to them causes tartar to form about the roots of the teeth. This tartar then presses on the tissues beneath it, interfering with the circulation; these tissues, then lacking sufficient resistive power, are invaded by pus-forming bacteria. The gums become swollen and red, and pus forms in the tooth-socket.

Once pyorrhea has developed, it becomes a serious menace to health, even to life itself. It may be prevented by regular cleansing of the mouth and teeth.

From decayed teeth, root abscesses and pyorrhea develop such diseases as:

Acute or chronic rheumatism, arthritis, cardiac lesions, neuritis, neuralgia, sciatica, digestive disturb-

ances and neurasthenia, as well as anemia and general debility.

To the prospective mother the care of the teeth is a matter of vital importance.

CHAPTER III

DO'S AND DON'TS FOR THE LAYETTE

IN the old days when a baby cried long and lustily, it was supposed to have colic or to be hungry. We know now it is frequently an indication of some physical discomfort. Very often this has to do with the clothing, a button, rough seam, safety-pin, or even a harsh thread in the material, digging into his tender smooth baby flesh.

Dressing an infant correctly is very important. It has much to do with his health and happiness. The key-note of the first wardrobe should be simplicity. lightness and softness. Fashion and furbelows should not enter into the scheme of things. A large assortment of various kinds of clothing is sheer extravagance, not only of the mother's strength but of materials.

There should be at least eight slips for use by day. Select some very soft material such as nainsook, long-cloth, batiste or cambric. They should be of standard length, which is about twenty-eight inches, shoulder to hem, and should be very simply made as eczema may be caused by irritating the tender skin. Special care should be used to avoid having anything

about the neck that might scratch or irritate. Starch should never be used in any part of a baby's outfit. Everything must be soft.

Four flannel petticoats are sufficient. They should be of light-weight part-wool flannel, made after the Gertrude or princess pattern. Petticoats should always hang from the shoulders and may be fastened by means of two straps on each shoulder.

The question of the shirts is a knotty problem, as about this little garment there is only one point on which all factions seem to agree, which is, that it should be opened all the way down the front. The most suitable material is the unsettled question. The all-wool garment is not so much in favor as it once was. The objections voiced against this are that it does not absorb perspiration, that the child is made too warm, becomes unduly sensitive and for this reason is a more ready prey to infection.

Linen mesh has many advocates as ideal for both winter and summer, the argument for this being that air space in clothing, as well as in buildings or refrigerators, stops the passage of either heat or cold and that this material is absorbent and non-irritating. Cotton and wool or silk and wool as the best materials have, however, the largest number of champions.

Infants' shirts come in four weights and several sizes. To prevent outgrowing so soon, begin with the second size. There should be a winter weight and a summer weight. Four of each is the minimum.

As there is no diaper fit to be used a second time without having been carefully washed and dried, four dozen is the least one should provide. They should be made of fine quality bird's-eye cotton or linen diaper-cloth, twenty by twenty inches. The diaper should be folded diagonally and then folded again, making four thicknesses of material. A piece of soft old linen, for further protection, may be laid inside the diaper just before it is adjusted.

Cutting the material large enough to allow for more than two folds (four thicknesses) is not advisable. A diaper at best is hot and more or less clumsy, while there is some evidence that thick wads between the thighs may promote deformity of the bones. In adjustment, care should be exercised not to pin too tightly about the hips or over the thighs where the two sides are pinned together, as this will interfere with the circulation.

Diapers should be washed with a pure white soap, thoroughly rinsed and dried in the open air. Until they are washed, keep in a covered pail, as intestinal disorders among infants are not infrequently carried by flies from carelessly exposed soiled diapers.

The fitted rubber article so frequently seen should not be used. This is particularly pernicious on account of the heating properties of rubber. During the day, the diaper should be changed whenever soiled and at night when the baby is taken up for feeding.

The bands or binders should be made of unhemmed,

soft white flannel. They should be cut on the bias and into strips six to eight inches wide and eighteen inches long.

When applying the band, it should be rolled gently around the baby's abdomen and sewed smoothly into place; it should not be secured by means of safety-pins. The object of the band is primarily to protect the cord dressing until the navel has healed. It should never bind. If drawn too tightly, instead of preventing rupture, it may produce it; especially is this true if the pressure is made in the wrong place. A band that binds will also interfere with respiration and may cause vomiting and colic.

After the first few weeks a knitted band with shoulder-straps should be substituted, as after this time the abdominal muscles need free play in order that they may become strengthened.

The knitted band should be worn night and day for the first three or four months. If the baby is frail or delicate, it should be worn as long as eighteen months, as chilling of the abdomen is thus prevented. Four bands of each kind should be sufficient.

The nightgowns should in a general way follow the style of the slips. They should be made long enough so as to close at the bottom by buttons or drawing-strings when the baby's feet have become active. In winter they should be made of cotton flannel or some other warm material and should, of course, be used without a petticoat. In summer the night-

gowns should be made of some soft cotton material.

When the baby is prepared for bed, his apparel should be changed throughout. While the little shirt need not necessarily be laundered each time it is changed, he should not wear the same one at night which had been worn throughout the day. Six night-gowns will be required.

There should be four pairs of merino stockings (mixture of cotton and wool). When the weather is warm the baby may not need stockings, but when it grows cool toward night, stockings should be used. The stockings should meet the diaper, leaving no part of the leg exposed. When the baby begins to creep around on the floor, soft-soled shoes will be necessary.

Two knitted or flannel sacks and two wrappers are essential for cool weather. If the sacks are crocheted, select a light yarn, and if made of cloth, let the material be light and soft. The wrapper should be of cotton flannel, henrietta cloth, challis, cashmere or any other soft material readily washed. It should button down the front and reach several inches below the feet.

As fresh air is very important, the wardrobe should contain a cloak of some warm, soft, woolen material. This should be made long enough to reach from the baby's neck to from four to six inches below his feet and wide enough to lap over his entire chest on each side.

The cap for winter may be of silk with an interlining of flannel. For milder weather, silk or muslin. Among the accessories there should be six bibs and two afghans.

CHAPTER IV

BABY'S BATH

A HEALTHY baby should be bathed every day. The tub bath should begin as soon as the navel-scar has fully healed. An infant's bathtub will answer for the first year of a baby's life, in fact until he has grown too large for it.

A baby should not be bathed for fully an hour after feeding. The temperature of the room should be from seventy-two to seventy-three degrees. It is not wise to have it hotter than this, as after the bath is over and the temperature of the room is suddenly reduced or the baby is taken in another room of a lower temperature, he may become chilled.

Now, having the room at the right temperature, the next step is to get everything ready for the bath, so there will be no delay once it has been started. Before picking up the baby, have everything that you are going to use right at hand. There should be a tray-basket or some receptacle always kept equipped with the necessary things for the baby's bath. This should contain :

Two wash-cloths (one for the face and one for the body), two old soft towels, pure white soap, safety-

pins (large and small), a powder-shaker, absorbent cotton (kept in a jar with a top on it), tooth-picks, a jar of vaseline, a clinical thermometer and a bath thermometer.

There should be a low stool or low wooden chair on which to set the bathtub, and the mother should place just opposite this another chair for her own use. This chair should, however, be a little higher than the one on which she has placed a full change of clothing for the baby.

The articles should all be placed in a pile on the chair in the order in which they will be used in dressing the baby. A bath-blanket and a bath-apron should be near at hand on the back of one of the chairs.

A screen should be placed near by to shield the baby from drafts, and if this is not at hand, one can easily be improvised by hanging a blanket over two chairs. Having all these things in readiness, prepare the bath-water.

The temperature of the water should be from ninety-eight to one hundred degrees Fahrenheit. It should be tested by means of a bath thermometer, but if none is at hand, dipping the elbow into the water is a good test. If neither too hot nor too cold for the elbow, but just comfortable, it is about right for the baby. It is well to have the water a little warmer than this to begin with so as to allow for cooling while undressing the baby, washing the face and ears and

cleaning the nose, but always test it before putting the baby in the tub.

Now put on your bath-apron, take the baby on your lap, quickly undress him and fold the bath-blanket around him, not forgetting to place a napkin between the blanket and the baby.

First, wash the face, while the baby is wrapped in the blanket. Do not use any soap for the face. It is not necessary to bathe the eyes with boracic acid or any antiseptic, as long as they appear normal, merely washing them very gently with the face-cloth.

In cleansing the ears, wash the external parts with a soft rag and carefully dry them, as well as the creases back of the ear, but *do not attempt to clean the ear by introducing anything inside the canal, such as a tooth-pick or a match wrapped with cotton*. The cloth may be stretched over the little finger and the outer ear cleansed.

The mouth of a baby does not need cleansing until after the teeth have come and any attempt to do so may cause harm by scratching the delicate tissues.

After these details, make a lather of soap on the palms and soap well the baby's scalp, using care to avoid getting soap into the eyes. Now change the position of the baby, so that the head is over the bath-tub, while the baby's back is being supported by your arm and the back of his head rests in the palm of your hand. In this position, with the baby's head slightly

lowered, to prevent water running into the eyes, wash away all the soap lather with the wash-cloth in your right hand. Let the baby rest on your lap while you dry the head thoroughly.

Now, unfold the bath-blanket from around the baby and while he is resting on your lap, soap the entire body. Then with your right forearm under the legs, the hand under the buttocks and your left forearm under the neck and shoulders, with your left hand under his arm, lift him quickly into the tub. While in the tub keep your left forearm and hand in the same position, while with your right hand you sponge the entire body.

Now place a large warm towel on the bath-blanket in your lap, lift the baby out of the tub and wrap in the towel, and with a soft towel, begin to dry him, not by rubbing, but by gently patting the skin. After the skin is good and dry, remove the bath-towel, place a napkin under the buttocks, and draw the folds of the blanket about him.

Too much powder is decidedly worse than none. After the skin is good and dry, a little talcum-powder may be used under the arms and in the folds of the skin, but wherever there are signs of redness or chafing, a drop or two of olive-oil rubbed on with the finger will be more effective than powder.

In dressing the baby, do so quickly and be very careful to keep him covered as much as possible. Do not

keep lifting and turning the baby while dressing him. Generally a baby can be dressed completely while lying on his back, after which he may be turned on his face while the garments are fastened.

CHAPTER V

MATERNAL NURSING

ONE of the great problems of the day is the proper feeding of infants and children. Whatever may be the difference of opinion, there is one fundamental principle on which all experts agree; that the ideal food for a baby is the milk of a healthy mother.

Aside from other important facts, bearing on nutrition and infection from unclean milk, the breast-fed baby is undoubtedly provided with a certain measure of passive immunity against possible infection by disease. This is thought to be due to certain antitoxins which pass from the mother to the child in human milk. In bottle-fed babies this immunity is not maintained.

As statistics have proven so conclusively that breast-fed babies are more likely to live; that they are more vigorous and more resistant to disease, it should be the ambition of every woman who becomes a mother to nurse her child during the first nine months of life. For not only will she be supplying the food intended by Nature, but insuring to her baby many more chances of life.

Successful nursing requires that one be well bal-

anced mentally and physically. This means that the emotions must be under control and the nerves well poised; there must be regular habits with good digestion and healthy blood as well as normal conditions of the nursing organs. As these mental and physical conditions result only from proper living through many years, it can easily be seen that the living conditions and habits of life of the growing girl have a most intimate bearing in fitting or unfitting her for this most important function.

Certain common sense rules of life have a direct bearing on successful nursing and as a preparation for maternal responsibility the prospective mother should give special attention to these. (See Chapter I.) Of equal importance with the physical preparation is the cultivation of a calm mind free from worry and fear. There are few conditions so variable and so uncertain as the production of breast milk. It is secreted by a wonderful and delicate mechanism called the mammary glands. There is no doubt that the nerves feeding these glands have an intimate relation with the mind, for their function is readily influenced by the mental states of the mother.

The clothing should be amply loose to allow for development of the breasts and to prevent depression of the nipples.

Nursing will be made easier for the baby and more comfortable for the mother if, during the last two

months of pregnancy the nipples receive special and regular attention. (See Chapter I. "The Prospective Mother.")

The baby should be put to the breast as soon as the mother has rested and sufficiently recovered from exhaustion. While the milk does not appear in the breast until from 48 to 72 hours after birth, there is a semi-opaque fluid secreted called Colostrum. This not only may satisfy the child but it is thought to act as a laxative to the baby, clearing the intestines of the waste material which they contain at birth; a further advantage of the baby's efforts at nursing is its stimulating effect upon the mammary glands which secrete the milk, also it prepares both the nipple and the infant for what will be required later.

If it so happens that the baby is unwilling to nurse, he should nevertheless at regular intervals be given the opportunity and after awhile he will become hungry enough to make an effort to get his food. In the meantime, he should be given from one-half to one ounce of boiled and slightly warmed unsweetened water every two hours until nursing is established.

Before and after each nursing the nipples should be washed with a saturated solution of boric acid. This is made by dissolving one teaspoonful of boric acid crystals in a glass of boiled water. The solution should be made fresh every day. Fissures or cracks

often result from omitting this care of the nipples. Unceasing care in this respect is especially necessary during the first few days. Between nursings the breasts should be kept covered with sterile cotton, gauze or a clean handkerchief, and this should be changed daily. If at the beginning of nursing, the nipples are sensitive they may be protected by a sterilized glass and rubber shield. A baby should never be allowed to nurse on a cracked or fissured nipple but the breast shield should be used until healing has taken place. Apply local applications of tincture of benzoin, or use a salve made of one-half ounce of vaseline, one drachm of lanolin and one-half ounce of aristol. The mother should avoid handling her breasts except with clean hands as there is danger of introducing foreign material through the nipple opening or a break in the skin. This may cause an infection and result in a breast abscess.

For the first day, the baby is usually put to the breast once in six hours; second day once every four hours, and on the third day, after the milk has come, every three hours. There should be in the twenty-four hours 7 nursings. That is, from six A. M. to ten P. M. there should be 6 with one nursing at two or three A. M. After the baby becomes older and is well started, the tendency is to lengthen the intervals. We are giving opposite a schedule which may be followed:—

<i>Age</i>	<i>Nursing in 24 hours</i>	<i>Interval by Day (hours)</i>	<i>Night Nursings 10 P.M. to 6 A.M.</i>
3rd day to end of 3rd month	7	3	1
3rd month to 5th month	6	3	
5th month to 12th month	5	4	

The baby should from the beginning be trained to regularity in nursing. This is most important, not only from the standpoint of the baby's digestion and assimilation, but the breast which if emptied at regular intervals secretes more and better milk. The establishment of regular nursing habits also enables the mother to secure more sleep at night and this aids the milk supply.

To promote the supply of milk the nursing mother should cultivate self-control and a quiet mind. She should have an abundant, wholesome diet and at least eight hours sleep out of every twenty-four, resting for an hour or two during the day if her nights are disturbed. Outdoor exercise which is always desirable is particularly necessary for the nursing mother, but to secure the best results, this should not be carried to the point of fatigue. Any food not causing indigestion is a safe food so far as nursing

is concerned and the appetite is a reliable guide both as to choice and quantity. Generally speaking, the diet should be a mixed one, consisting of milk (not more than one quart daily) cereals, soups, eggs, meat, fish, poultry, vegetables, bread and plenty of fruits. In other words, all is milk-making food and no sharp line between the various kinds can be drawn. Tea and coffee should be taken sparingly. Water, since it forms a large proportion of milk, should be taken very freely. There is a widespread belief that acid vegetables, such as the tomato, acid fruits and salads, should not be taken by the nursing mother for fear the acids will affect the milk and give the baby colic. This belief is erroneous. All acids are changed in the process of the mother's digestion and cannot enter the milk. The only articles of food that should be excluded from the diet, for fear of an unfavorable effect upon the milk, are those which from experience the mother knows she cannot easily digest.

Take your meals regularly and in addition two or three glasses of milk, between meals and one before retiring. This extra nourishment should be taken about one and a half hours after breakfast and luncheon in order that it may not lessen the appetite for the regular meals. If the breast milk is not plentiful, drink cocoa and at bed time take eight ounces of oatmeal or cornmeal gruel with eight ounces of milk.

The condition of the bowels is a very important matter for the nursing mother. She should guard

as carefully against constipation during the nursing period as during pregnancy. One free evacuation daily is most essential. Drugs should not be taken except upon the advice of a physician, as many of these are secreted in the milk and thus affect the baby. It is a condition which should be treated by hygiene and diet. At nursing time the mother and baby should be in a quiet comfortable place free from interruption or excitement.

The mother should sit in a low chair with the baby in the hollow of her arm. The breast should be held away from the baby's nose, so he can breathe. Ten to fifteen minutes is long enough for most babies at a nursing. Very often when there is a great supply of milk, and the baby is a vigorous nurser, five to seven minutes is sufficient time at the breast. Only one breast should be given at a nursing, if the milk is plentiful, but if there is not enough in one breast, give both, allowing at each breast five to ten minutes. After nursing, the baby should be held against the shoulder and patted gently on the back, in order that he may get the air up from his stomach. Then put him down to rest or sleep. If, however, he seems not to be comfortable, after a few minutes take him up and hold against the shoulder, to see if he cannot bring up more gas.

The importance of safeguarding the mother from worry and excitement cannot be overemphasized, for there is certainly no other one thing which so greatly

interferes with the secretion of milk as an overwrought nervous system. Great emotional disturbances such as worry, anger, fear or grief, may not only check the secretion but they produce poisons in the blood which are secreted in the milk. By reason of these poisons the milk then becomes dangerous for the baby.

If the mother has been greatly disturbed by any of these, she should not nurse her baby for several hours afterwards but should withdraw the milk by means of a breast pump. The baby in the meantime may be given a feeding of barley water.

The mother should never give up the attempt to nurse her baby without competent advice, as it not infrequently happens that nursing at first unsatisfactory, will later develop perfectly. And even if this does not prove to be the case, even a small amount of milk is of great aid to the baby, especially during the first three months.

The signs of successful nursing are: First, a satisfied, happy baby, and, if under three months of age, content to fall asleep at the end of ten or at the most twenty minutes nursing; two or three soft yellow stools daily and a weekly gain in weight of not less than four ounces.

If the baby remains for long periods at the breast; cries when he is removed; shows signs of hunger long before the nursing hour; cries, vomits or has colic after he finishes nursing, and fails to make any

appreciable gain in weight, the nursing is unsatisfactory.

Such symptoms seldom mean that the baby should be weaned but usually are an indication that the mother has not sufficient milk and that the breast feeding should be supplemented by artificial feeding.

The amount of milk the baby is getting from the breast can be determined by weighing him with his clothes on, before and after each nursing, for a period of about twelve hours, carefully putting down the result. At the end of the period by adding the different amounts together it will be possible to determine the amount of milk the baby has gotten during this time. After knowing this, it is possible to determine how much and how many supplementary feedings are necessary. In a situation of this kind it is essential to have the advice of a physician (preferably one specializing in the treatment of infants and children) to start the mother on the proper supplementary feeding.

Occasionally unsatisfactory feeding is caused by the milk being too strong or too weak, that is, the normal proportions of fat, sugar and proteid are not maintained. These errors are determined by examination of the milk and are usually easily corrected by the advice of a physician.

As soon as it has been demonstrated that nursing is satisfactory, many physicians advise giving the baby one bottle feeding daily. The advantages of this are threefold. In case the mother should have an acute

illness with fever (which always calls for temporary discontinuance of nursing) the baby's feeding is provided for; it gives the mother more freedom and chance for recreation and finally weaning is made easier by reason of the baby having been accustomed to the bottle feeding. In beginning with the daily bottle, at first a weaker formula should be given than that corresponding to the age of the baby, gradually increasing to a formula of the strength required for his age.

The baby should not be weaned earlier than the ninth month or later than the twelfth. This should be done gradually, so in case of illness he can be put back on the breast. Begin by giving one less nursing every second or third day until only two are given. Continue these two nursings for about a week after which they may also be discontinued.

When weaning a baby, while it is usually possible after the tenth month to give three parts whole milk and one part cereal water, the mother should consult her physician, as this is a period often overtaken by evil.

CHAPTER VI

MILK HYGIENE AND HOW TO PREPARE THE FORMULA

WHEN the problem of artificial feeding is presented, an inexperienced mother often is at a loss as to just how and where to begin.

The first consideration is to secure the proper formula. To formulate a proper milk for any child requires knowledge and experience which a mother cannot be expected to possess. It should not be undertaken without the advice of a good physician, when one is available.

While there is no perfect food that can take the place of mother's milk, it is generally considered that cow's milk properly modified, that is, adapted to the age and peculiarities of the child, is the best substitute. On the other hand, there are some food preparations which are very helpful in the feeding of delicate infants, particularly those unable to tolerate modified cow's milk. To experiment, however, with these foods, with different mixtures of cow's milk, or to attempt to feed the baby after the method of a neighbor, is a very unwise procedure.

In modifying milk the object is not to make it as near like human milk as possible but to make a cow's

milk modification which a human infant can digest. The relation of human milk to cow's milk given in percentages is:

	<i>Human</i>	<i>Cow's</i>
Fat	4%	4%
Proteid	2%	3.5
Carbohydrates	7%	4.5

From this it will be seen that the proteid in cow's milk is greater and the sugar or carbohydrates lower; the fat is usually considered about equal, although very frequently this has to be changed.

A matter of great importance is the selection of the milk. There is such a vast difference in the quality and cleanliness of milk, it becomes the duty of every mother to know something of its source. Milk should by preference be purchased from a reputable dealer, selling from a tuberculin tested herd and an inspected dairy. In other words, it should be certified milk. There is for this, very properly, an extra charge. This cost is, however, more than compensated for by the assurance of its purity. When compared with the danger and cost of illness due to the use of unclean milk, it is not to be considered. Milk should always be bought in bottles. Dipped or bulk milk is unfit for use as an infant food, since it is most apt to contain bacteria in large numbers. If one lives in the country where conditions make it impossible to secure certified milk, one should endeavor to make arrangements to induce the producer to at least safeguard the

purity of that purchased for formula use. The necessary precautions are:—

First. That the udders and teats should, before milking, be wiped off with a cloth, which is *boiled daily*, using plenty of warm water. Never wash teats with the milk.

Second. Before milking, a clean duster should be slipped on and the hands well washed with soap and hot water.

Third. The milk pail used should be well cleaned, scalded daily before use, and of the improved type, which means that it should be mostly covered, having only a small opening at the top.

Fourth. The first few jets of milk should be thrown away and the milking should not be done where dust and dirt, as from a hayloft above, is sifting down upon the milker, and as must follow, into the milk.

After the milk has been drawn, it should be strained through several thicknesses of clean cheese cloth (previously boiled), in which have been placed several layers of absorbent cotton, into quart bottles. The bottles should be placed at once in a pail of cracked ice in which it should be delivered. Those living in the country who control their own milk supply may easily carry out these precautions; those who do not must expect to pay to the producer considerable more for his diligence in safeguarding the milk. And are all these precautions warranted?

When we consider that the vast majority of intestinal derangements in infants during the summer are caused by impure milk, we answer, Yes! a thousand

times. Milk, we must remember, is an ideal food for germs as well as babies. And if to begin with it is swarming with bacteria, what myriads it must contain by the time it reaches the baby.

There is a very little to be gained by securing clean milk, if after delivery it is left standing in the sun or in the hot kitchen. The bottles of milk should at once be placed in the ice box, not in the part where food is kept, but in direct contact with the ice. The necessity for keeping the baby's milk in direct contact with the ice during the warm months cannot be too much emphasized. Milk always contains some bacteria, and if allowed to become warm and so remain for several hours, these bacteria multiply enormously. It is bacteria that cause milk to so quickly sour. And it is the poisons from the bacteria in the milk that produce so much bowel trouble in infants during the summer.

The convenient articles for use in connection with preparing the formula are:—

- A double boiler for preparing cereal water
- As many graduated eight-ounce feeding bottles as there are feedings in twenty-four hours
- A new clean cork stopper for each bottle, or non-absorbent cotton
- A graduated measuring glass, holding not less than eight ounces
- One two quart pitcher for use in mixing formula
- One funnel
- One fork
- One tablespoon

- One teaspoon
- One long-handled spoon for stirring
- Bottle brush
- Bottle rack to keep bottles upright in ice box
- A pail or kettle for use in sterilizing the utensils (and pasteurization)
- A nipple for each nursing bottle
- One thermometer for use in connection with pasteurization if the food is to be pasteurized

If the formula calls for cereal water, this should be made fresh every day and must of course, be prepared considerably in advance of the time needed. The methods of preparing cereal waters are:—

Rice Water or Oatmeal Water: Two tablespoonfuls of ordinary rice or oatmeal to one quart of water, cook three hours in a double boiler, adding water from time to time, that a quart may remain at the end of the boiling period.

Barley Water: Two level tablespoonfuls of prepared barley flour, blended with a little cold water, and added stirring to a pint of boiling water containing a pinch of salt. Boil hard for 3–5 minutes, stirring constantly. Then cook for *one hour* in a double boiler. After straining add as much boiled water as has boiled away.

Sometimes the baby's formula calls for lime water and in rare instances whey.

Lime Water: To a quart of boiled water, add, after it has cooled, eight lime water tablets. Allow this to stand over night, then strain and bottle.

Whey: First, make junket. Heat one pint of

milk one hundred degrees F. Add one junket tablet, previously dissolved in a little water, or two teaspoonfuls of essence of pepsin. Allow this to stand until firmly jellied, then stir with a fork and strain off the whey. This must be heated again to 100 degrees F. then cooled, before milk can be added, else it will again make junket.

After preparing the cereal water or other ingredient, as called for in the formula, the next step is to boil 2-5 minutes the feeding bottles and all other articles to be used. Then pour off the water from the bottles and other utensils, put on a big washable apron, wash the hands thoroughly and you are ready to begin. After assembling on a clean table all the things you are going to need, take the milk bottle from the ice box, rinse it with cool boiled water and wipe the top with a clean towel or cotton. Next, with the fork which is among your implements, remove the paper cap. Then with your formula before you, giving the exact ingredients for the number of feedings necessary for twenty-four hours, begin to mix them.

First, measure the necessary amount of boiled water (or cereal water) as may be called for in formula, measuring with the graduate glass and emptying into the pitcher. Then measure the sugar (when milk sugar is used it must be dissolved in hot water) and if called for, the lime water, adding these to the ingredient in the pitcher, stirring well the mixture with the long handled spoon, which should be among your sterilized utensils. After adding to this mixture

the necessary amount of milk, take your feeding bottles and fill with the required number of ounces. The bottles should then be tightly corked with corks, rubber stoppers or wads of non-absorbent cotton (preferably corks boiled daily) and placed in the bottle rack for pasteurization.

To pasteurize milk heat to 150 degrees F. and keep at this temperature for thirty minutes. There are various kinds of inexpensive pasteurizers on the market, but if unobtainable, pasteurization can be accomplished by securing a wire bottle rack and placing this in a pan deep enough to allow the water to come to the same line as the milk in the bottles. Starting with cold water, watch the thermometer closely until it has reached 150 degrees F. then replace a small quantity of the hot water by cold water from time to time, being careful not to allow the cold water to come in contact with the hot bottles. When the milk has been kept at 150 degrees F. for thirty minutes, cool quickly by gradually replacing all the hot water with cold water. The milk should then be placed at once on the ice.

Do not uncork the bottle from the time first closed until the baby is to be fed.

The type of nursing bottle used is an important consideration. It must be so constructed as to be readily cleansed. A long neck bottle having a sharp angle below or one with corners on the inside should never be used, since to clean such a bottle is difficult

if not impossible. The eight ounce cylindrical bottle (rounded both at bottom and top) with the scale in ounces blown in the side is the best nursing bottle.

Sometimes in writing a formula the quantity of milk used from bottled milk is spoken of by the physician in percentages of fat:

Whole milk contains four per cent. fat

The upper 24 ounces, five per cent. fat

The upper 20 ounces, six per cent. fat

The upper 16 ounces, seven per cent. fat

The upper 10½ ounces ten per cent. fat

When top milk is spoken of, use the first sixteen ounces. If the formula calls for whole milk, before using, shake the bottle well.

CHAPTER VII

HOW TO DECIDE ON THE FORMULA

[This chapter was written by Charles Hendee Smith, M. D., New York City.¹]

IN the beginning it must be definitely understood that it is impossible to give directions for a formula which will be correct for every child. It is well nigh impossible to do this for *any* child because every baby differs in some respects from all others. The feeding of infants is a difficult subject, one which has been much studied by some of the ablest minds in the world, and yet one which is not entirely understood in all its phases even now. Every few years it is necessary to revise one's theories according to new facts brought out by scientific study.

This is true even for the food of the average, healthy infant. For the one who is abnormal, or underweight, and especially for one with poor digestion, it is doubly true.

Whenever possible the diet of a baby should be ordered by someone who really knows the principles of infant feeding. At present, physicians who have

¹ Professor of Clinical Diseases of Children in Columbia University; Visiting Physician, Bellevue Hospital, Children's Medical Division; Consulting Physician, Infirmary for Women and Children and United Hospital, Portchester.

devoted time to studying the subject, and who have had experience in the actual handling of feeding cases are the only safe advisers in this important matter.

Every mother should put herself under the guidance of such a physician as soon as possible after the baby's birth, for she needs advice while nursing just as much as she does when the baby must be bottle fed. The hours of nursing, the length of time at breast, whether one or both sides should be given, and many other matters cannot be decided by instinct. The diet, exercise, and hygiene of the mother should be directed. The time of adding one or more bottles, and the formula for them are important matters. Most of all, the question of weaning, when and how it should be done, ought not to be left to the mother or the neighbors. Many babies are weaned too soon on insufficient grounds.

A very common mistake is to wean a baby who has indigestion, vomiting, colic or diarrhoea, with the idea that the milk is bad, when really he is merely getting too much of a very good milk. On the other hand, some babies are nursed weeks and months longer than they should be in a mistaken effort to avoid bottle feeding, when there is really no breast milk.

The expense of consulting a physician occasionally for a baby who is well is much less in the end than that involved after an upset is brought on by amateur feeding methods. Furthermore, unwise experimenting

may result in serious illness of the baby and perhaps even mean his loss.

There are certain fundamental principles which may enable a mother to make up a formula if she cannot easily reach a physician who understands the subject. The method given here applies only to the *normal, average, healthy* baby. It will *not* work with the unusual infant, nor when there is difficulty with the digestion.

I. In the first place it is necessary to know what TOTAL VOLUME of liquid food a baby needs in 24 hours. This may be determined by a very simple rule, depending on the weight of the child.

In the early months give about 3 ounces for each pound.

In the middle months give about $2\frac{3}{4}$ - $2\frac{1}{2}$ - $2\frac{1}{4}$ ounces for each pound.

Toward the end of the year give about 2 ounces for each pound.

For example:—

A baby of	7 lbs.	needs	3	×	7	or	about	21 oz.
" " " 10 "	"	"	$2\frac{3}{4}$	×	10	"	"	28 "
" " " 12 "	"	"	$2\frac{1}{2}$	×	12	"	"	30 "
" " " 15 "	"	"	$2\frac{1}{3}$	×	15	"	"	35 "
" " " 18 "	"	"	$2\frac{1}{4}$	×	18	"	"	40 "
" " " 20 "	"	"	2	×	20	"	"	40 "

Never give over 40 ounces a day.

II. The second point is the NUMBER and HOURS of feedings.

In the early months give 7 feedings.

At 6, 9, 12, 3, 6, 10, and once in the night (1-3).

After 2-4 months give 6 feedings.

At 6, 9, 12, 3, 6, 10.

Or 6, 10, 2, 6, 10, and once in the night (1-3)

After 3-5 months give 5 feedings.

At 6, 10, 2, 6, 10.

Some babies can be reduced to 6 or 5 feedings earlier than others. It is well to do this as soon as the baby will go without the larger number of feedings.

III. The AMOUNT AT A FEEDING is found by dividing the total volume of food by the number of feedings. It is usually *a little less than 1/2 ounce for each pound of the baby's weight.*

For example:—

A	7 lb. baby takes	21 oz.,	7 feeds,	3 oz. each
"	10 " " "	28 "	7 " "	4 " "
"	12 " " "	30 "	6 " "	5 " "
"	15 " " "	35 "	5 " "	7 " "
An	18 " " "	40 "	5 " "	8 " "

IV. The quantity of the formula having been determined, the next step is to decide on its quality. It must be made up of milk, water, and sugar or starch (flour). The AMOUNT OF MILK is found from the following rule.

Give 1 1/2 to 1 3/4 ounces of milk for each pound the baby weighs.

An	8 lb. baby needs	12-14	ounces of milk
A	10 " " "	15-17 1/2	" " "
"	12 " " "	18-21	" " "
"	16 " " "	24-28	" " "
"	20 " " "	30-32	" " "

Never give over 1 quart of milk.

Do not give top milk or cream (unless it is especially ordered by a physician) but *shake the bottle* well before pouring off the milk.

V. The difference between the ounces of milk and the total volume is made up by adding WATER. Plain boiled water is sufficient at first. After the first 5 to 7 months, barley water may be used as a diluent.

VI. In addition to the milk and diluent (water) it is advisable to add SUGAR in some form to each formula.

About an ounce of sugar is needed for most formulas. At first it is safer to add $\frac{3}{4}$ ounce, then increase in a few days to an ounce. If the baby does not gain and has good digestion, the sugar may be increased to $1\frac{1}{4}$ - $1\frac{1}{3}$ ounces. It is rarely, if ever, desirable to go above this amount.

It is necessary to know something of the different sugars. The three which are commonly used in infant feeding are milk sugar, cane sugar, and dextri-maltose (a mixture of malt sugar and dextrin).

Milk sugar is the natural sugar found in the milk, and so it would seem to be the logical one to use. It is expensive, however, and is no better borne than the others.

Cane sugar is the sweetest and therefore may be taken best when bottles are first given. It is the cheapest sugar and is well borne by most babies.

Dextrimaltose may be given in somewhat larger amounts since it is only about one half sugar. The dextrin (which is a substance midway between starch and sugar) is gradually converted into sugar in the body and so serves the same eventual purpose. Malt sugar may cause vomiting in some babies, and should never be used when that tendency exists. For the same reason, it is best not to give it to very young infants. *Dextrimaltose* No. 3 contains 2% of carbonate of potash which makes it more laxative. This may be used when there is a tendency to constipation, otherwise No. 1 should be used.

In general, then, it is perhaps best to start with Cane or Milk Sugar and later change to *Dextrimaltose*, especially if it is necessary to increase the sugar above one ounce.

There is one important difference in the sugars which *must never be forgotten*, that is that cane sugar is heavier, bulk for bulk.

1	ounce	of	Cane Sugar	contains	2	level	tablespoonfuls
"	"	"	Milk Sugar	"	3	"	"
"	"	"	<i>Dextrimaltose</i>	"	3	"	"
"	"	"	Barley Flour	"	3	"	"

Let us take one or two examples to illustrate the method described.

(1) A baby of one month who weighs 8 pounds:

- I. Volume of Food = (Weight \times 3) $8 \times 3 = 24$ oz.
- II. Number of Feedings = 7
- III. Amount at Feeding = $24 \div 7 = 3\frac{3}{7}$ or $(24 \div 7 = 3\frac{3}{7})$

Take Volume as $24\frac{1}{2}$ ounces; 7 feeds of $3\frac{1}{2}$ ounces.

IV. Milk (Weight $\times 1\frac{1}{2}$ to $1\frac{3}{4}$) = $8 \times 1\frac{1}{2}$ = 12 oz.

V. Water ($24\frac{1}{2}$ minus 12) = $12\frac{1}{2}$ "

VI. Sugar ($\frac{2}{3}$ -1 ounce) = Milk Sugar 2-3 Tbsp.
or Cane Sugar $1\frac{1}{2}$ -2 Tbsp.

The formula then, Water $12\frac{1}{2}$ ounces

Milk Sugar ... 3 Tbsp.

Milk 12 ounces

$24\frac{1}{2}$ ounces

Feed $3\frac{1}{2}$ ounces every 3 hours—7 feedings

At 6, 9, 12, 3, 6, 10, and once in the night.

If the baby does not gain, 1 or 2 ounces more milk may be added. Only $1\frac{1}{2}$ ounces per pound were given since this is a young baby.

(2) A baby of three months who weighs 12 lbs.

I. Volume of food = (Weight $\times 2\frac{1}{2}$) or $12 \times 2\frac{1}{2}$ 30 ounces

II. Number of feedings 6

III. Amount at feeding 5 ounces

IV. Milk = (Weight $\times 1\frac{3}{4}$) or, $12 \times 1\frac{3}{4}$ = 21 ounces

V. Water = 30 minus 21 9 ounces

VI. Sugar 1 ounce
30 ounces

Formula is Water 9 ounces

Milk Sugar

or

Dextrimaltose 3 level Tbsp.

Milk 21 ounces

30 ounces

6 feedings of 5 ounces

At 6, 9, 12, 3, 6, 10.

(3) A baby of seven months who weighs 16 lbs.

I. Volume of food = (Weight $\times 2\frac{1}{4}$) = 36 (35)

II. Number of feedings 5

III. Amount at Feeding 7 (Take 35
as Volume.)

- IV. Milk = (Weight $\times 1\frac{3}{4}$) or $16 \times 1\frac{3}{4} = 28$ ounces
 V. Water (35 minus 28) 7 ounces
 VI. Sugar 1 ounce, Dextrimaltose 3 Tbsps.

If no gain, increase sugar to $3\frac{1}{2}$ or 4 Tbsps.

Or add Barley Flour—1 Tbsp. (cooking 1 hour of course)

Formula is,	Water	7 ounces
	Dextrimaltose ...	3-4 Tbsps.
	Milk	28 ounces
		<hr/> 35 ounces

The question as to the use of barley water or plain water puzzles many mothers. Barley flour is mostly starch, which is changed into sugar by the digestive processes. It can be digested even by the youngest babies, with rare exceptions, and may be used at any time to replace part of the sugar in the formula. It is not necessary to use it in the early months. After the 6th-7th month it is well to add 1 tablespoonful to the formula, especially when the baby does not gain on a formula containing 1 ounce of sugar.

Thus in the last example given the formula could be made up as follows:

Barley water	1 level tbsp.
Water	7 ounces

Boil hard for a few minutes and cook for an hour in double boiler.

Add:

Water up to	7 ounces (to replace water boiled away)
Dextrimaltose	3 level tablespoonfuls

Cool and Add:

Milk	28 ounces
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5 feedings of 7 ounces ... = 35 ounces

Note: The Barley Water should always be cooled before adding milk *except* when milk supply is so poor that it must be boiled for safety.

Toward the end of the first year other foods should be given in addition to the formula. The latter is therefore not increased as much in proportion as the baby grows older, since some of the increased needs are met by the added foods.

Orange Juice: 1 teaspoonful to 4 tablespoonfuls *may* be given after the first 3-5 months and *should* be given after the 6-7 months.

Prune Juice, Prune Pulp, Apple Sauce, may be given at about 11-12 months. (Always cook fresh for one day at a time.)

Cereal: May be added at any time after 6-8 months. Farina, Cream of Wheat, Wheatena, Oatmeal, (all cooked 3-4 hours and well strained) are the best to begin with.

Give $\frac{1}{2}$ -1 tablespoonful at 10 o'clock

Later 1-2 tablespoonfuls at 10 and 6 o'clock.

Beef Juice: May be given with the 2 o'clock feeding at any time after 7 months. 1-3 tablespoonfuls of juice squeezed from a freshly seared piece of round steak.

Green Vegetables: (Spinach, peas, string beans, carrots) may be given after 9-10 months. 1 teaspoonful, strained, and always freshly cooked, may be given alternating with the beef juice at the 2 o'clock feeding.

For example:

A baby of 10 months weighing 18 lbs.

I. Volume	$2\frac{1}{4} \times 18 = 40$ ounces
II. No. of Feedings	$\quad \quad \quad = 5$

III. Amount at Feeding	= 8 ounces
IV. Milk=Weight $\times 1\frac{3}{4}$	= 32 ounces
V. Water=40 minus 32	= 8 ounces
VI. Sugar-Dextrimaltose	2-3 Tbsps.
Barley Flour	1 Tbsp.

In addition at 9 o'clock	Orange Juice	1 Tbsp.
" 10 "	Cereal	1 Tbsp.
" 2 "	Beef Juice	1 Tsp.
" 6 "	or Green Vegetable	1 Tsp.
	Cereal	1 Tsp.

The above simple method is applicable only to normal, average, healthy infants, it must be remembered. It will not apply to abnormal ones. When a baby is healthy but underweight for his age, it may be used as follows:

Take an average between what the baby should weigh, and what he actually does weigh. Make up a formula for the weight corresponding to this average. This will do for a starting point. If the baby does not gain, increase slightly. Do not give as much as the baby would take if he were of average weight.

For example:

A baby of 6 months weighs	10 lbs.
He should weigh about	16 lbs.
Average $26 \div 2 = 13$ lbs.	

Make up a formula as if baby weighed 13 lbs. Increase if he does not gain.

This will not be successful in all cases. Such babies need the care of a physician and should have it if one can be reached.

Directions cannot be given for feeding when there is acute or persistent difficulty with the digestion. There are certain fundamental principles which every mother should know, however, for a knowledge of them may save the baby a long illness and neglect of some of them may cost his life.

(1) In case of any *acute illness or fever* cut down the food *boldly*. It never does any harm to omit one bottle, giving water, or to put the baby on barley water while waiting for the doctor. A full feeding given to a sick baby may cause a very serious illness.

(2) In a sudden diarrhoea (loose or watery stools)—stop milk, give only barley water until the trouble ceases. In beginning milk after the stools are normal, add 1 ounce of boiled milk, gradually increasing to full amount in 5 or 6 days but *no sugar* until sure that diarrhoea will not return. Then add $\frac{1}{2}$ -1 tablespoonful of sugar and slowly increase to full amount. Stop boiling milk when back on regular formula.

(3) *Sudden vomiting* usually means the onset of a digestive disturbance. Stop formula and give only water or barley water until a doctor sees the baby.

Persistent vomiting is due to many causes. A great many babies spit up a little occasionally. This is not true vomiting and no great importance need be attached to it. The simplest cause of true vomiting is distension of the stomach by swallowed air. Holding the baby upright so that he can eructate "gas" after each feeding will often stop the vomiting. Too much at a feeding, too high fat (from the use of top milk or cream), too much sugar, (especially Dextrimaltose) may all cause vomiting.

If a baby vomits or spits up every day, after most of his feedings, and is not relieved by holding up to eructate, the milk may be skimmed. This is done by removing the top 6-8 ounces from the bottle with a Chapin dipper. The rest of the bottle or "bottom milk" is to be used. Since it has less fat and hence a lower food value than whole milk, it may be given in somewhat larger amounts—up to 2 ounces per pound of the baby's weight.

A baby who has had top milk or cream and who begins to vomit should be put on skim milk mixture until he stops vomiting.

It is also well to reduce the amount of sugar for a few days to one half to two thirds of an ounce.

Violent vomiting of all food in a young infant is a symptom suggesting spasm or obstruction of the outlet of the stomach. A physician must be consulted at once. Vomiting may be a serious symptom in any case and must not be neglected.

(4) *Hunger* indicates an increase in food. Hunger is not shown by crying after feeding, but by crying a long time *before* feeding time. A baby who is really hungry will not gain. If he has gained 4-6 ounces a week, it is evidence that he is getting enough food and the crying is due to some other cause than hunger.

(5) *Overfeeding* is a common mistake and eventually will upset most babies. The baby shows an increasing tendency to vomit or has too many stools with curds or mucus; or merely a failing appetite; or an eruption on the face (eczema). These symptoms come in almost any order, and if preceded by a rapid gain, 7-8 ounces or more in a week, overfeeding must be suspected. If the overfeeding is continued, all the symptoms become worse, and the baby may become very ill. Mothers are apt to want too large a gain. A baby who gains 4, 5 or 6 ounces

a week is gaining enough. A half pound a week is a large gain and anything over that amount may be too much. The food should never be increased when there has been a sufficient gain. It is not necessary to increase the strength or amount of the food more than once in two weeks in the majority of cases.

CHAPTER VIII

HOW TO GIVE THE BOTTLE

THERE is some misconception as to the proper way to give the bottle to a baby.

In giving the bottle there are four things against which to guard:—

- First. Giving the feeding too cold or too hot.
- Second. Contamination.
- Third. To avoid feeding either too slowly or too rapidly.
- Fourth. To prevent the baby from swallowing air.

A few minutes before feeding time take the bottle from the ice box, leave it corked, and place in a pan of slightly warmed water. The vessel should be deep enough to allow the water to cover the bottle above the milk line. Place the pan over a low fire and allow the water to heat but not to boil. To test the temperature of the milk. Place the bottle, after it has been wiped dry, against the cheek or remove the stopper and pour a few drops of milk on the inner surface of the arm. In either instance, if it feels comfortably warm to the skin, it will be right for the baby. If the milk has gotten too hot, cool by placing the bottle under running water.

Never test the temperature of the milk by putting

the mouth of the bottle or the nipple to the mouth, as in this way there may readily be conveyed to the child disease germs.

Before adjusting the nipple on the bottle, wash the hands thoroughly. If possible, do this under running water. Handle the nipple only by the neck and do not allow the hands to come in contact with the part which goes into the baby's mouth. Never use the kind of nipple which requires to be attached to a long rubber tube. To keep this clean is absolutely impossible and it therefore becomes a menace. The conical type of nipple is best, since to be cleaned it can readily be turned inside out.

The nipple must have 2 to 3 good holes so that the milk will *drop freely* (without shaking the bottle) when the bottle is held wrong side up. If the holes are not large enough, stick a needle in a cork, heat to red heat and pass through the nipple to make good holes. Boil afterwards to remove taste of burned rubber. Be sure that the baby can get the milk easily. He should finish the bottle in 7-10 or 12 minutes. It is not necessary nor advisable for him to take 20 minutes. If he cannot get milk freely from the bottle, he will swallow more air and be uncomfortable or vomit.

Before giving the bottle, it is a good plan to hold the child in an upright posture. For in this position, if there is any gas in the stomach, it is allowed to escape.

When giving the feeding, the baby should be placed in a semi-erect position. And why?

There is a real scientific reason. In the upright position, food when entering the stomach gravitates to the lowest point. This causes a displacement of any gas that may be present, to the highest point of the stomach. And what is the significance of this?

Simply that it makes possible the escape of the gas by mouth. This frequently happens at once in the form of an eructation.

When a baby is fed while lying in a horizontal position, a water lock is formed and the eructation of gas is prevented. What happens?

Since the gas cannot escape by mouth, it must necessarily pass through the intestines. This causes distension which is both painful and unfavorable to gastric secretion. Thus the horizontal posture by preventing eructation of swallowed air, is a frequent cause of vomiting, colic and disturbed sleep.

The correct way to feed an infant is to take him on the left arm, holding in the same position as for breast feeding. In presenting the bottle hold at an angle which will keep its neck continuously filled. The baby should be allowed to grasp the nipple squarely in the mouth. The feeding should always be finished within fifteen minutes. Slow feeding only multiplies the number of swallowing acts and therefore increases the amount of air taken into the

stomach. If the baby is sleepy, keep him awake until the bottle is finished. Never allow the child to sleep for a little while then take the bottle again. This unduly prolongs the feeding and interferes with digestion. On the other hand, if the bottle is taken too greedily, several times during the feeding, withdraw the nipple for a moment.

Immediately after the feeding, the baby should be held against the shoulder of the mother or nurse. He may be gently patted on the back to encourage the eructation of any air that may have been swallowed. After such eructation place the child at once in a horizontal position with a small soft pillow under the head and allow him to sleep.

After the baby has been placed in bed, the nursing bottle which has just been emptied, to prevent any milk souring in it, should be rinsed with cold water, refilled with water (adding a pinch of bicarbonate of soda) and left standing, until the bottles for one day's feeding have all been used. At the end of this time or when convenient, place the bottles in hot soap suds and scrub thoroughly using a bottle brush on every part of the inside of each bottle. After rinsing through several waters, they should be put on the fire in a kettle of cold water and allowed to boil for fifteen minutes. After they have cooled, place in cool boiled water in a covered receptacle until needed. The bottles are then sterile and ready for use.

The nipple after use should be rinsed with cold

or luke warm water and rubbed with a little common salt in order to remove the milk.

It should then be turned inside out and given the same treatment.

After being sterilized (boil once a day) they may be kept in a weak solution of boracic acid, or borax ($\frac{1}{2}$ teaspoonful to glass of water) in a vessel securely covered. A fresh nipple should be used for each feeding. Extra nipples should be prepared, since they are subject to many accidents. Infants should never be allowed to suck on a rubber nipple or pacifier. Aside from the air swallowed, there is the constant danger of infection from this source. Also, the constant sucking causes an enlargement of the soft tissues at the base of the nostrils and the formation of a spongy growth. This growth is known as adenoids; it blocks the nostrils causing respiratory disability and can only be removed by surgical interference. A celebrated throat specialist has said that two-thirds of the cases of adenoids that came to him were caused by children having a pacifier or having been allowed to suck their thumbs in infancy.

CHAPTER IX

WEIGHING THE BABY

THE average baby girl weighs seven pounds at birth, while boys usually tip the scales at seven and a half pounds.

While a healthy baby may weigh as little as five or six pounds and as much as ten or twelve, these weights are unusual.

During the first three or four days or even the first week while the mother's milk is being established, the baby may lose as little as one or two ounces or even as much as seven or eight ounces, but this loss is usually regained in from four to ten days, and from that time there should be a gradual gain.

The daily gain during the first month should average about three-quarters of an ounce. He should then average from four to eight ounces a week up to the sixth month. From the sixth to the twelfth month usually the weekly gain is from two to four ounces. In other words, the average baby usually gains from one and a quarter to one and a half pounds a month for the first six months; from the sixth month to the first year, about one pound a month. That is, at the end of five or six months he has doubled his birth

weight and by the end of the first year has trebled it.

As the weight is the best index of a baby's nutrition, he should be weighed at regular intervals. During the first weeks of life he should be weighed daily, and up to six months of age once a week. After six months once in two weeks is sufficient.

The ordinary platform balance scales with a special basket are the best for weighing a baby. Spring scales are seldom accurate, because of the difficulty in preventing the baby from moving. To weigh the baby:

Put a soft cloth in the basket of the scales and after undressing the baby completely, lay him on it, weigh carefully and mark down the result. The weight of the cloth must of course be deducted. If the room is not sufficiently warm, the baby should be wrapped in a blanket and weighed, afterward deducting the weight of the blanket.

Always keep a written record of the baby's weight from day to day and week to week, for it is impossible for one to carry this in the mind accurately, and the records should be kept for comparison.

A very rapid increase in weight is not the goal for which the mother should strive. The ideal is to have the baby weigh enough, but not too much; in other words, a duly proportioned or symmetrical development of all parts of the body.

The baby too fat is no more to be desired than the one too thin. For a baby who gains excessively, be-

coming very fat, is more often than not pale, with flesh too soft and muscles flabby and has not the life and alertness of the well-nourished and all-round well-developed baby. Such a baby is generally one fed on an exclusive diet of some well-advertised proprietary infant food, which, consisting to a great extent of sugar or starch, easily produces fat, but does not contain all the constituents necessary to proper development of bone, blood, muscle, nerve and tissue.

Usually the first indication to the mother that the baby she thought so fat and rosy has not been fed properly comes with his late development and sometimes weakness and deficiency of health. He does not develop normally as to cutting teeth, sitting alone or walking. He does not have as much resistance to the diseases of infancy and childhood as the well-nourished, alert, wide-awake baby who is full of life and motion.

On the other hand, if the baby is too thin—that is, much below his normal weight (unless he is just recovering from an illness)—he is usually fretful, seldom sleeps well and is apparently hungry most of the time. The chances are in a case like this that the child is getting sufficient food in quantity, but it is not the kind of food which he can assimilate; therefore he is poorly nourished.

The idea in baby feeding is to produce the happy-medium baby—that is, the one who weighs neither too much nor too little, but is well nourished and well

developed. This is best accomplished by giving a baby its natural food, the milk of a healthy mother. If this can not be obtained, then a correctly modified cow's milk is best. This should always be modified under the directions of a physician. Bottle-fed babies particularly need to be carefully watched as to their weight in summer. However, whether your baby is breast or bottle fed, if he does not make some gain week by week he is not being nourished properly. By all means see a physician.

While all babies are expected to make a steady gain, there are times when a child may make little or no gain. This often happens in the summer during periods of excessive heat when his food has been reduced or when there have been some slight digestive disturbances. This should occasion no worry, as it is far better to have little or no gain, or even a little loss in weight, than to upset his digestion by overfeeding in order to keep him gaining.

A standstill like this should, however, be temporary; and when conditions have returned to normal he should again begin to gain. A diminishing weight under normal conditions demands careful attention and the advice of a good physician.

Many mothers think if they have weighed the baby regularly until one year of age they have discharged their final duty in that respect. This is a mistake. A child should be weighed once or twice a week until

eighteen months of age and once a month until six years of age.

In determining the weight of older children, the height should also be taken into consideration.

The maximum permissible deviation in weight from the normal in older children should not be greater than ten per cent. When the deviation exceeds this the child should be placed under the care of a physician.

(For table of Average "Weights and Heights" see page 202, Chapter XXV, "Malnutrition and The Child.")

CHAPTER X

PROPER HABITS OF SLEEP

PROPER habits of sleep is a subject seldom given sufficient consideration by those caring for young children, and yet there is no habit formed which is of greater importance to the child.

A new born baby should for the first month sleep nearly all the time, that is, about twenty-two hours out of twenty-four. And throughout the second and third month from twenty to twenty-two hours. During the remaining three months of the first half year, he should sleep from sixteen to eighteen hours and up to the first year fourteen to fifteen hours out of every twenty-four.

At six months of age the day-time sleep should consist of a two hour nap during both the morning and afternoon. And in order that the baby may be prepared for the long unbroken period of rest at night, it is best to have the afternoon nap come before three o'clock. After the first year of age one hour in the morning and two hours in the afternoon will be sufficient. These periods of sleep should then be continued until the eighteenth month, after which time the morning nap may be given up. The afternoon

rest of two hours, should, however, be continued until the end of the second year. And from this time until the child is six years of age he should sleep from one to one and a half hours during the afternoon.

There is a very good reason why these sleeping hours should not be shortened. And this reason is the enormous growth of the brain. During the first year of the child's life the brain increases in size two and one-half times what it was at birth. This is a much greater growth than takes place during all the remaining years of life. Now, considering this fact alone, it can readily be seen how curtailment of the hours of sleep will cause a nervous, fretful baby.

Sleep is regulated largely by habit. This being true, it is most important for the welfare of the baby, as well as the comfort of the entire household, that from the beginning proper habits should be established. Now, in order to establish proper habits, one must first fix in the mind of what they consist. They constitute feeding, bathing and doing all things that pertain to the care of a baby, at a regular and definite time. If the correct routine is inaugurated at first, that is, if suitable feedings are given at definite times, followed by proper periods of sleep, little, if any, trouble will be experienced with sleeplessness. Sleep disturbances always mean at least one of four things:—Unsuitable food, bad habits, indigestion or illness of some character.

Most physicians agree that the three-hour nursing

interval is best for the baby until he is six months old and after this four hours may be allowed to elapse between feedings.

If well trained, a healthy baby will usually awaken about every three hours. The feeding intervals should be arranged so as to agree with the waking periods. But should the baby be asleep when the feeding period comes around he should be gently awakened and given his feeding. If, however, he should awaken at other than his feeding hour, do not under any circumstances give him his feeding because he happens to be crying. Investigate the cause. He may be too warm, too cold, or he may be in a cramped position. See if the diaper is dry, if the band or diaper is too tight and if his feet are warm. Then turn the baby and give him a drink of sterile water, slightly warmed. If after doing all those things he still continues to cry, leave him alone. He will soon discover that nothing is to be gained by crying and will go to sleep again. He will also have learned a little lesson in discipline.

An infant should never be allowed to go to sleep while nursing, neither should he be allowed to sleep on the mother's breast, nor with the nipple of the bottle in his mouth. From the beginning he should become accustomed to being put down while awake and go to sleep of his own accord. He should not be walked, rocked or dangled, neither should he be allowed to suck a rubber nipple or anything else. Not only are all of these methods of inducing sleep injurious, but

the baby will soon acquire the habit of not sleeping without them and will demand them with the full extent of his lung power. All that is necessary to induce sleep in the healthy baby is a satisfied appetite, a warm bed, a clean body, a dry napkin, and a gentle current of fresh air passing through the room. While the room should be moderately quiet, it should not be necessary to walk on tiptoe or to talk in whispers because the baby is asleep, as he will soon learn to sleep through ordinary household noises. During a long nap he should always be turned at least once.

A baby should always be trained so the longest period of unbroken sleep will come at night. And with this idea in view, he should not be fed as frequently during the night. Make the interval four hours beginning with the 6 P. M. feeding. That is, after being put to bed at 6 P. M. he should sleep until 10 P. M. when he should be given his feeding, even if it is necessary to awaken him. After this he should sleep until 2 A. M. and from then until 6 A. M. This will give three long periods of unbroken sleep. It will seldom be found necessary to give a feeding between 10 P. M. and 6 A. M. after the baby is four months old. Any healthy baby can easily go this length of time and the prolonged period of sleep will be much better for him than food. In the beginning, when breaking away from the night feeding, if the baby is wakeful, give him a few swallows of boiled and slightly warmed water from a nursing bottle. He

will soon learn to be content without the night feeding.

A baby should never be permitted to sleep in the same bed with the mother. From the beginning he should be provided with his own bed and whenever practicable, an entire room should be given over to him. This would then leave the question of heat, light and ventilation to be adjusted to his particular needs.

For the first three months the temperature of the baby's sleeping room should be about 65 degrees. But after this time it may be permitted to fall to 55 degrees. And after the first year 45 degrees is not too cold.

It is perfectly safe for a baby over a month old to sleep on a screened porch, in the summer, either night or day, provided of course, he is protected against sudden changes in the weather. Fresh air is a great sleep inducer and has a great sedative and soothing effect. Very often the fretful child is simply a victim of bad air. It is important to remember that the heat production in a child is very active and his need for oxygen much greater than the adult. Proper ventilation of a room is best secured by opening the windows from the top with cross ventilation.

Whenever possible, that is, in good weather, the child should sleep out-of-doors an hour or two each day, care being taken always to protect the eyes from strong light.

An important cause for disturbed sleep and restlessness in a young child is over stimulation during his waking hours. The baby who is brought out in the

evening to exhibit his cunningness or precocity to visitors or who is tickled, played with, tossed about from one to another with bright lights shining in his eyes, has his little brain brought to a fine state of excitement and hence does not readily compose himself to sleep thereafter. Much of the play to which babies are subjected is harmful, as they need quiet and rest. But particularly does this apply to playing with the child in the evening when he should be asleep. The possibilities are that this will upset his regular habits and result in some nervous disturbance.

When the baby is put to bed, see that the diaper is dry, that chafed spots (if any) are carefully cared for, that the sheets are free from wrinkles and that his hands and feet are warm. Care should be exercised not to tuck the bed clothing in too tightly. It is best to lay it over rather loosely, pinning it down around the bed with large safety pins.

During the summer months, when the baby is restless and sleeps poorly, a warm bath given at bed time, will aid materially in promoting quiet, restful sleep.

All children under six years of age should be put to bed not later than seven o'clock and should sleep until seven the next morning.

Never give an infant or young child any kind of soothing syrup to induce sleep; they all contain drugs that are exceedingly injurious to young children.

We are giving below a routine which, with some variations may be followed in the first year:—

Morning

- 6 A. M. Feeding
 7 A. M. (About 4th month) place on a small bowl
 or infant's chamber for bowel movement.
 The chamber should be held on the mother's
 lap with the baby's back well supported.
 8 A. M. Bath
 9 A. M. Feeding
 9.30 to 11.30 Place outdoors to sleep
 11.30 Exercise and play on bed
 12 noon Feeding

Afternoon

- 1 to 3 Outdoors to sleep
 3 P. M. Feeding
 4 P. M. Play and exercise. Should be taken up
 and held by mother for a part of the time.
 5 P. M. Undress and put on night clothing. Give
 sponge bath, if in Summer.

Night

- 6 P. M. Feeding
 6.15 Sleep
 10 P. M. Feeding and diaper changed
 2 A. M. Feeding (until 4th month) and diaper
 changed
 2 A. M. to 6 A. M. Sleep

CHAPTER XI

BABY'S CARE IN HOT WEATHER

IN order that a baby may be kept well and happy during the summer months, he should receive especial care. And this care should be based on three main principles:—

First. Guard against infection, from all sources, but especially through food.

Second. Decrease the heat production by giving less food and more water.

Third. Increase heat elimination by less and more porous clothing, better circulation of air and more frequent baths.

The most important measure in the care of a baby during the summer months is proper food. And by proper food we mean not only that which is fitted to the baby's digestion but food as free from contamination as you can make it.

If the baby is breast fed, the feeding problem is, of course, quite simple, for not only is the danger of contamination reduced to a minimum, but nature, mindful of the fact that during very hot weather there is a partial intolerance for food, tends to regulate the quantity and quality of mother's milk. It is for these

reasons that diarrhoeal diseases are not common among nursing babies. If, however, the baby is bottle fed, the summer feeding problem becomes much more difficult.

While the three c's of milk care—clean, covered and cold—are important at all times, they are particularly so during the warmer months.

Pasteurization is absolutely necessary during the summer months, unless one is sure beyond a doubt as to the milk supply, which would mean the breed of cattle from which obtained, cleanliness of the milker, the utensils and all other things that contaminate milk.

Before mixing the formula, all utensils to be used in connection with the work should be boiled. The hands should be thoroughly washed before preparing the milk and before handling either the bottles or nipples. The milk bottle should not, even for a minute, be allowed to remain off the ice.

While the baby may get the germs of disease in ways other than through his food, they usually enter by way of the mouth. For this reason, everything that is not thoroughly clean should be kept out of his mouth. Such things as pacifiers or comforters are an abomination and should never be used.

The baby should not be allowed to crawl around on the floor (unless on a space covered by a clean sheet or blanket) where he may come in contact with all kinds of germs.

Flies are carriers of disease. In fact many cases of summer diarrhoea are directly traceable to germs carried by these insects. Flies should not, therefore, be allowed to come near the babies. The only way to avoid them is to screen the windows and doors and keep all containers of waste food material covered. The surroundings of the home should be free from uncovered garbage, manure or rubbish of any kind. Such things attract not only flies but other insects that carry disease. Always there should be a covered pail for soiled diapers, for should flies be allowed to come in contact with these, they may go from them directly to the baby or to his food. The baby should not under any condition be given anything to eat that a fly has touched. There is only one way to avoid this. Simply to make it a cardinal rule to place food where flies cannot come in contact with it. While all rooms should be screened against flies in summer, if this is not possible, by all means screen the baby's room.

As a protection against mosquitoes, which not only prevent the baby from receiving proper rest but may also carry disease, the carriage, hammock or bed, when indoors or out, should be protected by netting so adjusted as to prevent mosquitoes from crawling through while not interfering with the free passage of air.

During hot weather not only is there a lessened desire and need for food but the digestive power is lowered. For this reason particular care must be exercised to avoid overfeeding. For if more food is

given than the baby can digest, fermentation is allowed to take place. Poisons are then generated and absorbed. These bring about fever and prostration. The resulting diarrhœa is Nature's effort to rid the intestine of the offending material.

If the breast-fed baby should show tendency to vomit or to colic, the breast should be given every four hours instead of every three, and frequently between nursings cool (not cold) boiled water should be given.

For a bottle-fed baby the food should in warm weather be reduced by about one quarter to one third the ordinary amount. This does not necessarily mean that the quantity must be reduced. Simply reduce the strength of the formula by adding less milk, making up the difference with boiled water or some kind of cereal water. Give cool boiled water frequently between the feedings. Regularity in feeding, while important at all times, is particularly so in warm weather.

The gain in weight is necessarily less in summer than under the more favorable conditions of cooler weather. In fact, some perfectly well children do not gain during the extremely hot weather. There should, however, be no loss of weight.

The condition of the bowels is very important. While summer diarrhœa may first be signalled by an increased number of evacuations with griping pains in the abdomen, causing the baby to be fretful and

restless, it may also come on quite suddenly, making itself known by vomiting, fever, griping pains and frequent evacuations. Even a slight attack should prompt the mother to send for the physician. And pending his arrival, all food with the exception of boiled water should be withheld. And as the intestine must as much as possible be relieved of the offending material producing the trouble, the baby should be given two teaspoonfuls of castor oil. These precautionary measures are particularly important. For proper treatment at the beginning may be the means of avoiding a very serious illness. After even a slight attack of diarrhœa or any digestive disturbance, the baby's digestive ability is below normal. Thus the return to food must be gradual, especial care being exercised for at least ten days or two weeks. For since one attack of diarrhœa predisposes to another, a second attack with very little cause may occur.

Measures for keeping the baby cool and comfortable are important precautions in summer care. First, it must be remembered that infants feel the heat much more than adults. Many babies are made uncomfortable by an excess of clothing. Do not be afraid to take off the baby's clothes. The fewer the better during the hot months. The summer clothing should be loose, light and soft. When in the house, a slip and a light knitted band, in addition to the napkin, may be all that is necessary. And on excessively hot days one may dispense with the slip. If, however, the temper-

ature should drop as when a storm comes up, or towards nightfall, the baby must of course, be dressed in such a way as to protect from chill.

In warm weather only the thinnest cotton clothing should touch the baby's skin. In general, neither wool nor starch should be allowed in the baby's clothing in summer.

The diaper should be made of cotton cloth, never of any kind of flannel. The cotton cloth washes easily and is less irritating to the skin. Flannel gets hard and rough after washing and will keep the baby hot and make him sore.

If more than a month old, do not think of worrying the baby with a flannel band in summer. A band is very apt to twist and get out of place making him very uncomfortable. After the cord has dropped off all that is necessary is a light knitted band with shoulder straps. At night take off everything that the baby has worn during the day, put on a fresh band and diaper and a soft roomy night slip.

In washing the diapers use soap containing no free alkali and be sure they are thoroughly rinsed. Every diaper once used, no matter if only slightly dampened, should be washed before using a second time. After proper washing the diapers should be dried out of doors.

In hot weather, since an infant needs to conserve all his energy, quiet and plenty of sleep are particularly essential. For if entertained and excited, he is much

more liable to digestive disturbance than if quiet is imposed.

During the summer the baby should be bathed at least twice a day. In the morning he should have his usual cleansing bath and at bed time should be given a bath just a little cooler.

When the skin is inflamed or chafed or when the baby suffers from prickly heat, he should be frequently bathed in cool water but soap should not be used on the inflamed skin. A starch, bran or soda bath is often used in such cases, resulting in much relief and comfort.

For the Starch Bath: Just use a cupful of ordinary cooked starch, without adding anything to it, to a gallon of water.

For the Bran Bath: Put a cup of bran meal in a cheese-cloth bag, tie the bag at the top and stir this in the bath water until the water takes a milky hue.

For the Soda Bath: Just dissolve two tablespoonfuls of ordinary baking soda in some water and add it to four quarts of water.

Fresh air is particularly essential during warm weather. Do not keep the baby in the house unless it is cooler indoors than out. Take him out on the porch, under a tree or into the park, but do not keep him shut up in the house. At the same time avoid exposure to the sun. Always see that the baby's eyes and head are shielded from direct sunlight. This is just as important when he is asleep as when awake.

CHAPTER XII

CONSTIPATION OF INFANTS AND CHILDREN

Constipation is one of the most common disorders of the human family. It is found in each year of life from early infancy to old age. Among infants and children constipation is a prevalent and troublesome derangement, having a far reaching effect. Its causes are many and varied. They are by physicians divided into two groups:—

Predisposing and direct causes.

Among the predisposing causes thought to have a bearing are:

First. That the intestinal walls since they are less muscular than those of the adult, have less power to contract and expel the contents. In other words, that peculiar worm-like motion of the intestines (produced by contraction of its muscular fibers) which pushes the contents of the intestines onward, is less active in children than in adults.

Second. The pelvis or hip bones, since they have not obtained the adult breadth, form a basin with a relatively smaller capacity. And in comparison with this the bowel is about one-third larger pro-

portionately. This means that the bowel must fold upon itself. Thus in place of one sack or pouch as in the adult, there is in the large intestine of infants and children, numerous loops or curves. These naturally render the passage of the intestinal contents less free.

Third. Other factors considered no less important by many are that the digestive juices, especially bile, are proportionately less in the child and that nerve power is necessarily deficient, since the sympathetic nervous system is undeveloped.

These predisposing causes are influences beyond our control. We mention them merely to show that anatomically infants and young children are more liable than adults to constipation.

The direct causes are the ones with which we are concerned. These are:—

Errors in diet
Deficient intake of fluids
Irregularity of habit
Improper posture when putting children to stool
Some abnormal condition about the rectum.

While it is sometimes difficult to determine in a given case the reasons for constipation, it is usually found that among bottle-fed babies the chief causes are:—

First. Too much proteid (the curd or casein). This is the element in cow's milk forming the principal part of cheese.

Second. Too low a percentage of fat.

Both of these causes may be removed by determining in each case the proportions of fat and proteid suited to the digestion. This is a problem always to be placed in the hands of a competent physician. Other errors in feeding that may have a bearing on constipation among the bottle-fed babies are:—

Too little sugar, insufficient quantity (causing scanty stools) and the use of boiled milk.

If cutting down the proteid and raising the percentage of fat does not correct the trouble or if it is impracticable to reduce the proteid, many physicians replace part of the sugar by maltose (a laxative), or they give one feeding daily of malted milk, to replace the customary feeding. Some, in preparation of the formula, use in place of boiled water, oatmeal water, which is laxative. Orange juice is of great value in helping to relieve constipation. It may be given as early as the beginning of the fourth month. Begin by giving one teaspoonful daily, strained and diluted with a little water. This may, a little later, be increased to a teaspoonful twice daily between feedings. Then, when well taken it may be gradually increased until at six months the child is taking four teaspoonfuls twice daily and at one year one ounce twice daily.

If after regulating the formula and giving orange juice, constipation still persists, some physicians advise fifteen to thirty drops of pure cod liver oil three or four times a day or a teaspoonful of sweet oil two or three times daily.

When the breast fed baby is constipated, it is most often because the baby is responding to this condition in the mother or because the mother is not paying sufficient attention to diet and exercise. The first consideration of the mother should then be to look carefully after her own régime. She should eat fresh meat and an abundance of fruit and fresh vegetables, taking very little tea or coffee, but milk, cocoa, creamed soups and much water. Daily exercise is also a most important factor. At least three hours daily should be spent in the open air. If after the mother has carefully and faithfully regulated her bowels and her daily life, constipation in the breast-fed baby still persists, a little cream (from one to two teaspoonfuls) taken from the top of the best obtainable milk, diluted with an equal amount of quite warm water, given just before nursing, will by supplying the fat often aid greatly. If, however, this does not agree with the baby or is not efficacious, fifteen to thirty drops of pure cod liver oil may be given three or four times daily or a teaspoonful of sweet oil, two or three times daily.

The errors in diet causing constipation in "run-about" children are usually : —

First. Too much milk to the exclusion of other foods.

Second. That the child has not learned to like vegetables or has not been given the coarser cereals and breads.

Third. Sufficient fruit has not been added to the diet.

The diet of a constipated "run-about" should in addition to oatmeal, hominy, corn-meal mush, green vegetables, rare meats and coarse breads, take in much fruit. Stewed fruits should be given at meal time and raw ripe fruit freely between meals.

At all ages one of the body's greatest necessities is that sufficient liquid be supplied. This is necessary that by the skin, kidneys, respiration and bowels, normal elimination may take place. All too often infants and sometimes "run-about" are given practically no fluid except milk. And how does lack of sufficient fluid in the system have a bearing on constipation?

In children, especially when there is muscular weakness of the intestinal walls, the contents of the bowels are moved forward very slowly. During this leisurely process, the fluid portions become absorbed. And as a result, the stools become hard and dry and are naturally more difficult to expel. Water is as essential for infants and children as for adults. And when given freely several times daily, it is a simple means of helping to avoid and aiding in the relief of constipation.

To establish the habit of regularity in bowel movement is of great importance. As early as the fourth month it is possible to begin to train the child to have stools at regular intervals. At stated periods each day,

he should be placed upon a small bowl or infant's chamber. This should be small enough to comfortably fit the buttocks and in order that the baby's back may be supported should rest on the lap. Once or twice a day he should be placed on this vessel. The best time to select for the first effort is shortly after the first feeding. This is true, not only because, when taking food into the stomach a worm-like motion is started along the intestinal tract, tending to move forward its contents, but it is well to establish the habit of moving the bowels the first thing every morning. If not convenient to do this after the first feeding, it may be left until the second. While the effort may not in the beginning be successful, if persisted in the child will be sure to respond to the regularity and thus the habit of moving the bowels at a certain time each day will become established. The important point to remember is that the effort must be made at the same time each day.

When old enough to sit up unsupported, the child should be put to stool on a comfortable chair, low enough to allow the feet to rest on the floor. The adult chamber, since it tends to allow displacement of the organs, not permitting the child to strain to any purpose, should not be used for children.

It is hardly possible to begin too early to educate the intestine into the regular unaided performance of its natural function. A habit early established and later understood by the child will not be easily broken.

In fact, it is likely to be carried through life. On the other hand, if the habit has not been formed and the child is left to make known his wants, it is easy to see how he may become constipated. The child prefers to play rather than spend the time attending to his toilet obligations. And even if he has felt the inclination, this may be repressed. A regular performance of this function must not only be early established, but the child must be taught to go to stool at the same time each day and remain until his bowels move.

Sometimes there is about the rectum some abnormality, such as cracks or slight tears in the mucous membrane just inside the anal opening, or a relaxed condition of the rectum, called *prolapse*. While both these conditions may have, in the first instance, been caused by constipation (diarrhœa may also cause fissures) their continuance may be a cause for constipation. The first condition, because of the pain produced by the passage, causes the child (particularly the older children) to put off the ordeal as long as possible. The second condition results in more or less inability to expel the movements. Abnormalities such as these always require the care of a physician.

And now just what is constipation? Is it merely inability to have a daily stool without artificial assistance?

No. In the healthy child there must be not only a daily evacuation but this must be normal. Even though there may be a daily movement and possibly

more, if this is dry and comes away in hard pieces, the child is still constipated.

During the first six months, infants usually have two stools daily. Many may, however, have only one and if this is normal in character, constipation is not present. The stools of the bottle-fed baby, while not likely to be as frequent (when feeding is properly carried out) as in the breast-fed, are larger and more bulky.

The aim should always be to relieve constipation by dietetic measures and habits of regularity. If, however, these fail, temporary relief must be obtained by recourse to other expedients.

Massage of the abdomen will often aid in the relief of constipation. It is best given for about five minutes night and morning. Let the child lie on his back with abdomen exposed. Then, after moistening the hand with warm olive oil, albolene or vaseline, gently massage the abdomen, using a light circular motion and very little pressure. Begin just above the right groin, proceed to the margin of the ribs, then across the body and down on the left side. This should never be done just after feeding and always, to avoid chilling, care should be exercised.

If when putting the child to stool results are not forthcoming, the use of a soap stick or gluten suppository may be all that is necessary to bring on an action. In an effort to establish the habit of moving the bowels at a certain hour, the gluten suppository

may be used for several successive days, but should be employed only as a temporary measure.

When the child is badly constipated and needs immediate relief, it may be necessary to give an enema of plain warm water (95 degrees), or, in especially severe cases, of warm olive oil, one or two tablespoonfuls. In older children when the constipation is especially obstinate, an enema of two or three ounces of warm olive oil is often given at bedtime for several successive nights. This is given through a very small rubber tube attached to a bulb syringe. The oil is intended to be retained until morning when after breakfast the child is placed at stool.

Enemas should not be commonly employed. When used promiscuously they may for two reasons result in more stubborn constipation.

First, their indiscriminate use tends to cause the bowel to lose its tone and to soften and dilate the bowel wall.

Second, the child soon learns to wait for this stimulation and does not have a stool without it. For these reasons their use should be supervised by a physician in order that the character and frequency of the enema may in each case be adjusted to the needs of the individual child.

Drugs should never be used unless ordered by a physician. The use of castor oil for chronic constipation is to be avoided, since its after effects are constipating.

By means of dietetic measures, persistence, regularity, and massage, constipation in infants and children may be overcome. Of these expedients not the least is regularity, since children are made up of habits, good habits or bad habits.

CHAPTER XIII

INFECTIOUS DISEASES

THE old idea still persists, unfortunately, in many instances, that it is wise to expose children to the common contagious diseases, in order that they may have these so called "Children's Diseases" and be through with them. This belief is entirely erroneous. For contagious disease, even in mild form, holds possibilities of more serious consequences. That is, the greatest danger in most instances does not come during the ordinary course of the illness but rather as a result of complications. This being true, all children and particularly young children, should be zealously guarded against exposure.

Contagious diseases are carried generally by means of bodily secretions of those who are ill. For this reason, it is imperative that young children showing symptoms of disease, should be isolated from other children until it has been determined whether or not contagious disease is present. It is usually possible to determine this after twenty-four hours or at the most forty-eight hours.

Some diseases, such as diphtheria and meningitis, it is believed, may be borne also by means of carriers.

Carriers are people who, while not ill themselves, harbor the germs of disease and disseminate them from one to another. It is doubtful, however, if such carriers are dangerous to those who are healthy, unless coming into intimate personal contact with them.

The different contagious diseases are characterized by certain distinctive features and symptoms. If these are known to the mother, she may save herself much needless anxiety.

Measles is probably the most common of all the contagious diseases. The first symptoms are those of a cold in the head. There is sneezing and coughing with much watery secretion. The eyes are inflamed and in most instances the child complains of the light. With the onset, there is also slight fever. The rash which consists of small irregular groups of dull red slightly raised spots, (which increase in size and finally run together) does not make its appearance usually until the morning of the fourth day. This is generally first seen upon the forehead, then upon the neck and chest, until finally it covers the entire body. The eruption, after the second day, begins to fade. While measles should never be regarded as of slight consequence, it is particularly dangerous for children under one year of age. The chief danger lies with the complications which may accompany or follow the disease. Some of these are:—

Bronchitis, pneumonia, tuberculosis, or trouble with the kidneys, eyes or ears.

The child should be kept in bed in a cool comfortable room and the eyes should be protected from light. As a generous supply of fresh air is essential and since darkening the windows, to a certain extent cuts off ventilation, the eyes should be protected by turning the bed away from the light and placing about it a screen.

A child sick with measles should always be under the care of a physician. For it is this supervision with good nursing which prevents complications. Isolation is generally kept up for a week after peeling ceases. Children who have been exposed to measles should be kept from other children for a period of ten to fourteen days. This covers what is called the incubation period. That is the time which may elapse between exposure and onset of the first symptoms, if the child has taken the disease.

Rubella (German Measles) resembles measles, but is of a very much lighter form. With this the child may not complain at all of feeling sick. A light rash appears first on the face and chest, rapidly spreading over the body, and within two or three days fading away. The eyes become slightly reddened and there may be a little temperature. One of the most characteristic symptoms to be noticed is an enlargement of the glands back of the ears. These appear as rounded, irregular prominences and are generally tender upon pressure. German measles is very infectious. While it needs little other than good nursing care, isolation

for about a week should be enforced. The time within which the disease may develop after exposure (the incubation period) is about ten days.

Scarlet fever, while not so infectious as measles, is much more serious. This disease generally manifests itself very suddenly. The first symptoms noted may be a sore throat, severe headache with high fever, or the child may vomit and become ill. The rash which consists of very fine spots so close as to make the entire skin appear bright red, appears generally within twenty-four hours after the onset of illness. This is seen first on the neck and upper part of the chest, later spreading to other parts of the body. The duration of the rash is variable. This depends upon the intensity of the attack. It may last anywhere from three to ten days. Within a period varying from a week to ten days, the skin of the body begins to peel off. This may be completed about the twelfth day or it may be in process three weeks or more. Scarlet fever, no matter how mild it may seem, should never be viewed lightly, for always there is danger of serious complications accompanying or following this disease. Some of the most serious of these are:—

Nephritis (inflammation of the kidney), inflammation of the middle ear, arthritis (inflammation of the joints) and heart affections.

A child who has been exposed to scarlet fever should be kept from other children for a period of a week. This covers what is called the incubation period,

(time between date of exposure and date of onset) if the child has taken the disease.

Chicken-pox is another contagious disease producing a rash. With this quite frequently there are no early symptoms, the appearance of the rash being the first indication. The eruption consists of small raised pimples which later become filled with fluid. Then within a few days over the tops of these raised spots, scabs form. This rash, different growths of which may appear, is rarely in evidence longer than ten days. Chicken-pox is not dangerous and needs no unusual care. The child should be isolated but may be allowed to play around in a warm, well-ventilated room. As this disease is diffused through the secretion contained in the eruption, isolation should be enforced until all the scabs have fallen and the spots entirely healed. The incubation period (time within which, after exposure, the disease develops) for chicken-pox is about two weeks. So children who have been exposed should be kept from school whether or not they have developed the disease.

Mumps is a common infectious and contagious disease, the characteristic symptoms of which are so distinctive, it is seldom mistaken for any other. The onset is generally marked with a chill, headache and some rise in temperature. There is pain and swelling in front of the ear (at the angle of the jaw) and the mouth is usually dry with scant, sticky saliva. Some-

times there is stiffness of the jaws, making it difficult to open the mouth. After four or five days the disease reaches its height and the pain and swelling gradually subside. A child ill with mumps should be under the supervision of a physician. The usual nursing care is required. Isolation should be in effect as long as there is any swelling. The period that may elapse between the time of exposure and the appearance of the disease varies from eight days to two weeks.

There are few illnesses more exhausting than whooping-cough. It is particularly dangerous for infants and young children and every effort should be made to protect them from this infection. The disease is most prevalent in spring and summer and reaches its highest point in August. The first symptoms are those of a cold in the head accompanied by a sharp nervous cough. The cough gradually increases until finally there is a succession of violent coughing attacks accompanied by a feeling of suffocation and flushing of the face. It is supposed to be most infectious during the initial stages. An attack of whooping-cough may last anywhere from three to eight weeks. Many mothers consider whooping-cough so simple they do not think it necessary to place the child under a physician's care. This is very unfair to the child. Medical advice should always be secured. Under the best treatment the disease may not only be

shortened but the danger of such complications as bronchitis, bronchial pneumonia, tuberculosis and anæmia, greatly lessened.

Children with whooping-cough should be kept in the open air practically all the time. Unless there are complications it may not always be necessary to put them to bed, but the paroxysms are generally diminished if kept in bed for a time or at least kept quiet. If the child is weak or has fever he should be kept in bed but the bed should be somewhere in the open air. For fresh air and sunshine (without exposure) is extremely necessary throughout the disease. Nutrition is an important factor. It must be kept up at any cost. If a child vomits a meal as soon as he has eaten it during a paroxysm, he should be given another with the probability that he will retain it long enough to be digested. The character of the food should depend upon his condition but should be that which is quickly and easily digested. Vomiting may be prevented by quiet or if the child will rest for awhile after eating. It is important that plenty of water be given, since there will be less irritation and consequently paroxysms less frequent, if the mucous membranes are kept moist. The treatment of whooping-cough is individual and should always be left to the discretion of a physician.

The period that may elapse between the time of exposure to whooping-cough and the appearance of the disease is not definitely known, it may vary from two to ten days. A child who has been exposed should

not return to school for at least ten days and a safer rule is two weeks.

The mother should always remember that if her child has been exposed to any of the contagious diseases, he may be a menace to other children. She should always feel morally bound to recognize this, doing everything possible to maintain such quarantine measures as will protect other children.

CHAPTER XIV

HOW TO CARE FOR INFECTIOUS DISEASES IN THE HOME

"It is all right, she is well enough to go to school. In fact she is not sick at all." This was the unanimous verdict of the family. The subject of the conversation was a young and robust school girl, who during the week-end had a very, very slight attack of Rubella (German measles), so light in fact she felt indisposed for only a day and no one outside the family knew she had had the initial symptoms.

The family conclusion was correct so far as saying: "She is not sick at all." That she might give this disease to others less strong than herself seems not to have entered their minds. But this was grossly unfair. For it was only a week hence that a message came from the mother of this little girl's chum asking her not to stop for Mary on her way to school, as she was quite sick with Rubella.

Nowhere is it more applicable than in connection with communicable diseases to paraphrase the golden rule: "Do yourself what you would desire of another whose child might be a source of danger to your own family." For if no one passed them on to any one else, communicable diseases would come to a standstill.

The spreading of most diseases is due to carelessness. As it is often impossible, in the beginning, to distinguish between the infectious and non-infectious, it is wise to separate children until the true nature of the disease is known. If found to be infectious or contagious, the separation must be kept up until there is no danger of giving it to others. Now, how can isolation be carried out in the home?

First, select a bright sunny room at the top of the house, removing all unnecessary articles, such as upholstered furniture, draperies or rugs. It is very desirable that the floor be bare in order that it may be mopped every second or third day with carbolic solution 1-40. The dusting should also be done with a cloth dampened with this solution. If the disease is highly contagious, further precautions may be taken by hanging up a sheet dampened in 1-20 carbolic, in the line of air currents. It will be necessary to provide:—

One large foot tub for use in disinfecting the bed clothing

One medium-sized covered pail in which the water used in bathing the child and other secretions may be disinfected before being carried to the toilet

Two wash basins, one to be used when bathing the child, the other for cleansing the hands after caring for the child

One hand brush for use in cleansing the hands, after contact with the child or any of the secretions

Several large paper bags in which may be placed gauze or cotton swabs for burning

One round basin for use in washing dishes
One mop and a small dusting basin

In addition there should be a large glass bottle or some container for carbolic solution and if possible some way of providing hot water without the necessity of going to the kitchen. If a room can be had adjoining a bath-room isolation can be made much simpler. It will, of course, solve the necessity of bringing water from any other part of the house. The bed linen can then be disinfected in the bath tub and of course the stationary wash basin may be used for cleansing the hands. Anything that is taken into the sick-room should be left there. Only one person should care for one in isolation and no other member of the family should be allowed in contact. When entering the room and before approaching the bed the hair should be covered with a cap or large handkerchief and the clothing should be protected by means of a long gown. These should hang just inside the sick-room, easily accessible upon entering. They should not be worn outside the room.

All the discharges should be disposed of carefully. Those from the mouth and nose should be received in gauze or cotton, deposited in a paper bag and burned at least once a day. Those from the bowels and bladder should be received in a china vessel, disinfected with chloride of lime and allowed to stand for an hour. If chloride of lime cannot be obtained milk of lime

may be used. This may be made by adding one part of slacked lime to four parts of water.

After handling the child or any of the secretions, the hands should be scrubbed with warm water and soap (running water preferably) then soaked for a few minutes in bichloride solution 1-1000. Special care should be used in washing the hands before going to meals.

All linen used for the sick child or on the bed should not be taken from the room until it has been soaked for twelve hours in a 1-40 solution of carbolic acid. After this it should be wrung from the solution, transferred to a covered pail and boiled separately from the clothes of the other members of the family.

The dishes used in the sick-room should be left there. The refuse should be scraped into a paper bag and burned. If too many dishes accumulate, they may after a thorough washing in hot water, be transferred to a pan which has been left at the door, taken to the kitchen, covered with cold water and boiled. After dishes have boiled for five minutes, it is perfectly safe to use them.

In caring for cases of high fever it is important that everything possible be done to prevent the child from exerting himself. Exertion will not only cause an elevation of temperature but also an acceleration of the pulse rate. This adds to the tissue waste and increases the strain upon the heart.

There should be a constant supply of fresh air without exposure to drafts. The bed should be carefully looked after and kept fresh.

That the mouth be cleansed frequently is most important. Not only is this essential for the comfort of the sick one, but also to check bacterial growth and reduce the chances of complicating inflammations.

The period of quarantine or isolation for the contagious or infectious diseases is varying in length. This should be decided by the physician.

After recovering there should be a general bath of hot water and soap. This should include a thorough washing of the hair, a close cutting of the nails (fingers and toes) and cleansing under the nails. The child should then be wrapped in a clean sheet and taken to another room.

The room which has been vacated should be thoroughly cleaned and aired. The floors and woodwork should be washed with hot water and soap and then gone over with a soft cloth wrung from 1-40 solution of carbolic. The mattress and pillows should be brushed with a whisk broom which has been lightly dipped into carbolic solution. The blankets should be sunned and aired for several days.

For most infectious diseases fumigation is now considered unnecessary if the room is subjected to a thorough cleaning and airing.

To make a 1-40 solution, one calculates the amount

equal to $\frac{1}{40}$ of the whole solution. Thus to make a quart of 1-40 carbolic solution:—

A quart being equal to thirty-two ounces, the amount of pure carbolic required would be $\frac{1}{40}$ of thirty-two ounces— $\frac{32}{40}$ or $\frac{4}{5}$ of an ounce, and as there are eight drachms in an ounce, the amount required would be a little less than $6\frac{1}{2}$ drachms (teaspoonfuls). It is better to make a more concentrated solution (1-20) or 5%, which would require twice as much acid. From this as a stock the weaker solution of $2\frac{1}{2}\%$ or (1-40) may be made by diluting one half.

When making up a solution of carbolic be sure to use very hot water, otherwise globules of the acid may remain undissolved and any one of these will burn living tissue. In case of a burn apply alcohol. Pure carbolic will frequently return to the crystal state. When this happens, place the bottle in a deep vessel in warm water, standing it on a saucer or some absorbent cotton, place over the fire and before the water reaches the boiling point crystals will have dissolved. Always be sure to remove the stopper when placing pure carbolic over the fire, otherwise the gases being unable to escape may cause an explosion.

The bichloride solution may be made by dissolving one tablet in a pint of warm water. This solution should be changed every day.

Both carbolic and bichloride are deadly poisons and bottles containing these should not be placed where they might be mistaken for other things.

CHAPTER XV

THE BIRTHRIGHT OF BEAUTY

THE advantages of good looks are too obvious to need comment. The substructure of beauty is the birthright of every child. "So many objectionable-looking people that we see every day upon the street," according to Mr. Dooley, "are the survivals and leftovers of the age of barbarism and ignorance."

Nature is seldom so lavish of her gifts as to warrant trifling with her handiwork. Ninety-five out of one hundred children will, if intelligently handled, develop a good background for beauty. And yet, in many children the natural inheritance is often hindered.

How? By lack of vigilance during infancy. Some things must be guarded against to insure to each child his birthright of beauty.

First, we would mention the habit of sucking a rubber nipple, commonly called a "pacifier," thumb sucking or finger sucking. This habit injures the health and also lessens the chance for beauty.

The perfect mouth should be of medium size, the upper lip bow-shaped and the under nearly straight, while the lips should not be too thick. The child may have inherited in every respect a perfect mouth,

but the constant exercise to which the parts are subjected, if allowed to suck continually on anything, is conducive to thick lips. The protrusion of the upper jaw, also, spoils the natural arch of the mouth. The constant sucking also contributes largely to a narrowing of the jaws (thrusting the upper jaw forward) and to a narrowing of the roof of the mouth.

It spoils the natural shape of the mouth and causes thick lips. The jaws do not bear the proper relation to each other; consequently, the teeth do not meet correctly and have a tendency to bulge outward.

The "pacifier" habit may be controlled in several ways—by using a mitten—by pinning the sleeve down over the offending hand for several days and nights, or by pinning the sleeve to the dress or bed-clothes. If the baby is old enough to use his hands for playing with toys, they should be set free from time to time. During this time, if the fingers are put into the mouth they should be at once removed and the child's attention diverted. At sleeping time, the hand should be so arranged as to prevent the baby getting it to his mouth, as long as the habit persists.

Some children develop the habit of ear-pulling. The child pulls on either one or the other ear during most of its waking hours and generally when going to sleep. The favorite point of attack may be the lobe of the ear or it may be the upper portion. The result, however, is the same—the ears are pulled out of shape. This habit may be controlled by bandaging the hands,

using a light piece of pasteboard as a splint to prevent bending the fingers, which prevents the child from grasping the ear. Sometimes the ears have a tendency to protrude even though the child may not pull upon them. When this is the case care should always be exercised to see that the ear is flat when the baby is put down. Later, when the child becomes more active, if the ears appear to be too prominent, they should be kept back tight to the head by a skeleton bonnet made of tape. This should come well down over the ears and tie under the chin.

Eyes are a determinant factor in appraising beauty. No one thing so affects one's first impression of a person, obviously attractive, as large, clear, well-opened eyes. And what are the defects acquired in early life which mar an otherwise beautiful eye?

Barring accidents and infection, the most serious defect in a beautiful eye is "cross-eye." So often when this develops in young children, parents wait for the child to outgrow it. This is a great mistake. The child should be placed in the hands of a competent physician who will correct it by means of a simple operation. This is most important not only from the standpoint of beauty, but in order to preserve the sight in an eye that otherwise may become practically useless. Preventable also are eyes apparently half-closed, commonly called "squint-eye." Squint-eye is in most instances caused by far-sightedness, often combined with astigmatism. The squint develops

usually between the ages of one and five. It is brought about in most cases through use of the eyes which need corrective glasses for the far-sightedness, making close observation difficult. Squinting may also be a habit. It may be caused by placing a young child where he may stare at a strong light. A baby is like a moth; he is fascinated by strong lights.

In answer to a question we recently put to an artist as to the keystone of beauty building, we received the answer: "Even, white teeth and a perfect mouth." We believe all are agreed that no one feature so detracts from personal beauty, as misshapen, crooked or protruding teeth set into a malformed mouth. The foundation for a strong, beautiful set of teeth is laid in infancy. The food the baby receives during the first nine months of life is a great factor in the child's dental development. If the diet is poorly balanced, if the sugar and starch content is too high, and the fat, tissue-building and mineral substances too low, it has a pernicious effect upon the teeth in later life. The "pacifier" habit, thumb and finger sucking are also detrimental to the development of even, properly placed teeth.

The care of the first teeth is extremely important. Until the end of the second year, the baby's teeth are best cleansed by wrapping a clean index finger with absorbent cotton and dipping this into a solution of boracic acid, applying it with gentle friction to the teeth and gums. After the second year the teeth

should not be lost or extracted prematurely, since in addition to other things, this permits shrinking and warping, leaving insufficient room for the new and larger teeth. The decay of the teeth is most rapid between the ages of six and fifteen, perhaps due to the fact that this is the period of most rapid body growth. In addition to the most painstaking care from the standpoint of cleanliness, teach the child to finish his meals with some slightly acid fruit, rather than sweets, since acid fruits stimulate the secretion of slightly alkaline saliva. And how does this alkaline saliva protect the teeth?

It is the acids in the mouth, formed as a result of certain bacteria always present in the mouth, feeding on the decomposing products of certain kinds of food, principally sweets and starchy foods, which attack the teeth. When the last article of food is such as to cause an alkaline flow of saliva, it acts as a protection to the teeth. This saliva is not only Nature's anti-acid mouth wash, but it coats the teeth and prevents them from being etched by the decomposing food products which would otherwise remain.

Girls are dependent upon the beauty of their hair for a large measure of their attractiveness. If there is an abundance of natural oil, one shampoo a week is sufficient, while if it appears to be dry and brittle, once in two weeks will suffice. The essential thing is cleanliness.

During early childhood, short hair not only pre-

vents excessive perspiration about the neck and head, which might be a cause for taking cold, but it enables one to keep the scalp in a more healthful, active condition.

What is more lovely than the clear, velvety skin of the young? This should be carefully guarded; especially is this true of girls. If cold winds make chapping a frequent occurrence, leaving a rough skin, it should be overcome by applications of cold-cream, which will insure a better complexion as they grow older. Use a dry cream and rub in thoroughly.

A well-shaped hand has always been the delight of artists. A habit most disfiguring to the fingers is nail-biting. Children who acquire this habit are generally very nervous or their general health is below par. Every means should be used to break up the habit and to build up their general health.

When building for beauty the lower extremities should not be overlooked. So many children are allowed to grow up with "bow-legs," which are particularly disfiguring all through life. The chief cause for bow-legs is thought to be some nutritional disturbance in early life which prevents proper hardening of the bones. "Bow-legs" may also be caused by allowing children to walk too early, especially heavy children. During the early years, while the bones are still pliable, "bow-legs" are easily corrected by the wearing of braces especially constructed under the direction of an orthopedic surgeon. In mature child-

hood, the correction of "bow-legs" may necessitate an operation.

Train the child to place the feet properly. The feet should be parallel in standing and walking, toes pointing straight forward. This is not only the most healthful attitude, since it allows the weight of the body to be evenly distributed, but it is also the most graceful foot position.

If children are fortunate enough to receive early attention and care, they will grow up with a background which, when colored with health, will make charming human pictures.

CHAPTER XVI

IS MY BABY ALL RIGHT?

WITH an inexperienced mother, not knowing whether or not her baby is thriving, it often happens either that she becomes unduly alarmed at small matters, or fails to appreciate the serious nature of certain abnormal conditions.

In the growth and development of children, there are certain characteristics common to them all and of these every mother should have an intelligent understanding.

The average baby at birth weighs about seven pounds. During the first few days or the first few weeks of life, there is some loss in weight, varying from a few ounces to even a pound. Within four to ten days the baby should have returned to its birth weight and from this time on there should be a steady increase. The most rapid gain in weight is from the first to the third month, while the slowest gain is usually from the sixth to the ninth. Generally, at the end of six months, a baby will have doubled its birth weight and at the end of a year trebled it. Bottle-fed babies do not, as a rule, gain as rapidly at first as do breast-fed babies, but if properly fed the gain during the later months is about the same.

While there should be a constant growth in stature, this is not as regular or as important as the question of weight. Usually, at the end of a year, the average child has grown about nine inches in height. About five inches of this stature is generally gained during the first six months and four inches during the last six months. During the second year, the average gain in height is about three and five-tenths inches. And from this time until the eleventh year there should be a gain of from two to three inches a year.

All new born babies have at the top of the head, a soft spot. This is an inch and sometimes an inch and a half in diameter. It is called the *anterior fontanelle*. When the child is about fourteen months old, this should begin to close and by the twentieth month or the end of the second year, should be entirely covered over with bone. If at the end of the second year, this soft spot is still present, a physician should be consulted. For it means always that the child is not developing properly.

There is also at birth, usually, a soft spot at the back of the head. This is called the *posterior fontanelle*. Generally this spot is covered over with bony tissue at about the sixth week.

Some babies during the early weeks of life appear to be cross-eyed. This condition, unless it persists after the third or fourth month, need cause no concern. If, however, after this period, the cross-eye still continues, it should be called to the attention of the

physician. The eyes coördinate at about the third month. And beginning with the fifth or sixth months objects are recognized.

While an infant is deaf for the first twenty-four hours after birth, the sense of hearing is acute as early as the fifth or seventh day. A baby usually begins to recognize familiar voices from the third to the sixth month.

At average times various evidences of intelligence appear and all mothers should know when these may be expected. For if too long delayed it may mean that something is wrong.

During the fourth month the baby learns to hold its head unsupported. Anywhere from the third to the fifth month he begins to laugh aloud; between the fifth and seventh month, he will reach for toys and hold them in his hands. A baby is usually able to sit erect without support and hold the spine upright at seven or eight months of age.

Creeping begins sometimes as early as the sixth month. The first attempts at bearing the weight on the feet are generally between the ninth and tenth month and usually a baby can with assistance stand at about the eleventh or twelfth month. Babies should not be urged to stand alone too soon. In fact, most children, especially those who are heavy, need moderate restraint rather than encouragement in their efforts at standing and walking. For it should be remembered that not only are the bones of a young child pliable,

but the muscles and ligaments are at first lacking in strength. And while this strength is gained by use, such use should come about very gradually. Attempts at standing and walking too early may cause a curving of the bones, otherwise known as bow-legs. The eleventh or twelfth month is early enough to begin standing a baby alone. A child is generally able to walk along about the fifteenth or sixteenth month.

Usually, at one year of age, a few words can be spoken and by the end of the second year, a child is generally able to make sentences of two or three words. Girls usually talk earlier than boys. While the time of speech development varies greatly, if delayed after two years, the child should be placed under the care of a physician.

Some young children have protruding abdomens. As a rule this need cause no concern, but if the child cries when lifted and otherwise shows signs of tenderness about the bones, some disturbance of nutrition may be suspected, and a physician should be consulted.

The teeth appear in groups. There are five of these groups and between their appearances various intervals elapse. The incisors (central teeth) are usually the first to appear. Generally, between the sixth and ninth month, they begin to cut through the gums. After the first teeth appear, there is usually a pause of from five to eight weeks before the next group begin to cut through. After the second group, there may be a pause of from one to three months before the appear-

ance of the third group. Thus, by the time a baby is one year old, there may be six teeth. After the third group of teeth there may be a lapse of two or three months, before the first molars (the fourth group) appear. The fifth and last group, the second molars, come through anywhere from the twenty-fourth to the thirtieth month.

There are twenty of the milk teeth, ten in each jaw. The order of their appearance is generally:—

First incisors (central teeth)	lower jaw	6th to 9th month
"	upper jaw	8th to 12th "
Second "	lower "	12th " 15th "
"	upper "	8th " 12th "
The canine or "stomach"	lower "	18th " 24th "
" " " "eye"	upper "	18th " 24th "
First molars	lower "	12th " 15th "
"	upper "	15th " "
Second molars	lower "	24th " 30th "
"	upper "	24th " 30th "

If in cutting the teeth the average is not followed, it need cause no concern, since there may be considerable variation not only as to time, but in order of appearance. If, however, by the end of the first year, no teeth have come through, a physician should be consulted. While dentition may be considerably delayed in normal cases, it frequently means that due to improper feeding, the child is not developing properly. The first set of teeth, known as the "milk" teeth, are, beginning about the sixth year, replaced with the permanent or second teeth.

And what do we mean by a normal baby?

We mean that it is not necessary for a child to do

everything on schedule time, since children differ in the rapidity of their development. We mean that the normal baby not only gradually develops in body and mind, but has a look of health and well-being.

CHAPTER XVII

SUDDEN EMERGENCIES OF BABYHOOD

SINCE a physician is not always within reach, every mother should be prepared for at least the common emergencies. The first consideration looking toward this is the equipment of the nursery medicine cabinet. This should contain only simple medicines and appliances, never anything the use of which is not thoroughly understood.

The equipment outlined below is applicable to the nursery cabinet:—

Material and Appliance

- Absorbent cotton
- Package of sterile gauze
- Hot water bag
- Medicine dropper
- Medicine glass
- Soft rubber ear syringe
- Fountain syringe
- Small basin (kidney shaped)
- Clinical thermometer
- Package of wooden tongue depressors
- Bandages, two inch and four inch
- One roll of adhesive plaster one inch wide
- One pair small dressing forceps
- One pair scissors
- Two bent glass drinking tubes

Ointments, Crystals and Powders

Vaseline
Zinc Oxide (salve and powder)
Cold cream
Talcum powder
Soda Bicarbonate
Boracic acid
Powdered mustard

Internal Medicines :

Castor oil
Petrolatum
Milk of magnesia
Syrup of Ipecac
Sweet Spirits of Nitre
Soda-Mint Tablets
Sweet oil
Lime water

External Use :

Tincture of Iodine
Alcohol, ninety-five per cent.
Witch Hazel

And now let us consider some of the sudden emergencies with which a mother may be confronted.

Convulsions: A convulsion may come on suddenly or gradually and one predisposes to another. While the vast majority are due to indigestion and constipation, some of the diseases of children are ushered in with convulsions. With the first appearance of a convulsion, a physician should be summoned. While awaiting his arrival, place the child at once in a warm mustard bath (temperature one hundred to one

hundred and five degrees F.). To a small foot-tub three quarters full of water use two teaspoonfuls of mustard or four teaspoonfuls to five gallons. Before adding the mustard to the water tie it into gauze or make into a paste. If a bath thermometer is not at hand, test the temperature of the water with the elbow. The baby's head, to which cold compresses should be applied, should be kept raised. That is, it should rest in the hollow of the left arm, while with the right hand the body should be rubbed vigorously. The baby should be kept in the bath only about five minutes (never longer than ten minutes) then without drying wrapped in blankets. In the meantime, if the physician has not arrived, give a soap-suds enema (made from castile soap) using one pint of water in the bag of a fountain syringe. As soon as the child can swallow, he should be given two teaspoonfuls of castor oil. For the next twenty-four hours great care should be exercised in feeding. For a bottle-fed baby, only barley water should be given and for an older child, broths should take the place of milk, no solid food being given. A child who has had a convulsion should be carefully guarded against excitement for the next few days.

Croup: The onset of croup is very sudden. The child goes to bed apparently well, awakening within a few hours in great distress with labored breathing and a hoarse cough. Children with enlarged tonsils and adenoids, it is believed, are more subject to it than

others. Whenever a baby has an attack, the doctor should be summoned, since in addition to other things, it is imperative that one make sure the child is not suffering from laryngeal diphtheria, called membranous croup. In the meantime, the child may be given a teaspoonful of syrup of ipecac, which if vomiting has not occurred, may be repeated in fifteen minutes. A hot moist atmosphere is of much service in causing the paroxysm to relax. This may be brought about by the use of a croup kettle—a kettle with a long spout enabling the steam to be carried where needed. If this is not at hand, a steaming tea kettle, kept boiling by means of an alcohol lamp or gas stove, may be used. The inhalation is always more effective if the child is confined under a tent. Such a tent may be rigged up by covering the bed with a sheet or a large umbrella, allowing the spout of the kettle to rest under it. Great care must of course be exercised not to burn the child or set fire to the bed. A mild attack of croup will often yield to the application of cold moist cloths about the throat. For this, fold a soft cloth into four or five thicknesses, place in cold water (60 degrees F.) and after wringing it dry, place about the throat from ear to ear. This should be covered with a piece of oiled silk and held in place by means of a handkerchief or small towel. The compress should be renewed every fifteen or twenty minutes. When the attack has subsided, remove all damp clothing and

gradually cool the room while keeping the child warmly covered.

Earaches: Infants and young children are very susceptible to earache, particularly during winter. It may accompany or follow a cold or such diseases as diphtheria, measles, whooping-cough or pneumonia. With very young babies sometimes the only indication of trouble is sharp crying with high fever and restlessness. Older children usually put the hand to the affected ear or toss the head from side to side. The best way to relieve earache is by a hot irrigation of boric acid, temperature 110 degrees F. (see Chapter XXII). Such simple measures as a few drops of warmed sweet oil dropped into the ear or the application of a hot water bag or salt bag (warmed in oven) when applied to the affected side will often give relief. Before dropping warmed sweet oil into the ear, the mother should always first test it in her own ear, to be sure it is not too hot. Persistent earache always demands the attention of a physician.

Foreign Bodies Swallowed: It is seldom that foreign bodies swallowed cause harm. The important thing to remember is that a cathartic should not be given. In case of an older child give bread, potato or any coarse food, while a child as old as six months may have oatmeal or cornmeal mush. These are given in the hope that they may form a mass around the object (thus preventing injury) while it is carried forward

through the stomach and intestines. If the foreign body is not found in the stool, the child should be taken to a physician for x-ray examination.

If an object lodges in the throat, hold the child upside down while an assistant slaps him on the back. If not coughed up and the breathing is still difficult, it may possibly be dislodged by forcing the index finger far back into the throat.

Foreign Bodies in the Ear or Nose: A foreign body in the ear should be removed only by a physician, since efforts in this direction by an untrained person may serve only to push it in further, making final removal more difficult.

A foreign body in the nose may often be forced outward by placing one finger against the unobstructed nostril, while the child blows his nose. If this does not remove the object, leave it, without "poking at it" until the arrival of a physician.

Foreign Body in the Eye: The upper lid is the usual location of a foreign body. Often its removal can be accomplished by such a simple process as: Grasping the upper lashes with the thumb and index finger, pulling the lid away from the eye and well down over the lower lid before letting go the grasp. By this method the lower lashes sometimes sweep away the offending particle. If, however, this does not remove it, then the upper lid should be everted. To do this: Grasp the eye lashes of the upper lid

firmly between the tips of thumb and forefinger, then, while the eyes look downward, turn the lid over a small lead pencil or pen holder, gently wiping away the object, if it can be seen, with the pointed fold of a clean handkerchief or a small swab made of a little absorbent cotton wrapped around the end of a tooth pick or the stem of a match. It is better to moisten the point of handkerchief or swab with sterile water or a solution of boric acid before using. Never use saliva, as the eye is easily infected. Do not attempt to wipe a particle from the eye with the ball of the finger. There is danger of scratching the cornea with the finger nail.

Nosebleed: Nosebleeds, if continually occurring, generally mean an ulceration in the nose. This should receive special treatment. At the time of the nose-bleed keep the child in an upright position, making pressure with the thumb and forefinger just below the bridge of the nose. A small piece of ice may be wrapped in a towel and held on the affected side, after releasing pressure. Do not allow the child to blow the nose as long as there is any danger of renewed bleeding.

Hiccough: In infants this may be caused by some form of stomach irritation, such as, swallowing air while taking food or taking too much food, thus overfilling the stomach. It may also be induced by sudden exposure to cold. Relief may be brought about by

a drink of water, gentle massage of the abdomen or sometimes merely by placing the baby face downward across the lap.

Wounds: When the skin has been broken, next in importance to controlling the hemorrhage (if any) is the prevention of infection. Do not handle the wound. After washing the hands thoroughly, twist a piece of absorbent cotton around a tooth pick and with this apply iodine around the edges on all sides to a depth of about one inch away from the wound. *Remember that the iodine must always be diluted.* Iodine that has stood becomes very strong and if used without being diluted may cause a bad burn. The safe way to use iodine is to pour off a small amount in a medicine glass (about one teaspoonful) and dilute it one-half with alcohol. After treating the wound with iodine it may be cleansed with a warm solution of boracic acid. This dressing may be left on until the wound has healed, or if it is a gaping cut until it can be cared for by a physician. The application of hydrogen peroxide to a fresh cut (so commonly used) is not a good plan, since germs from the surrounding parts may be washed into the wound.

Bruises and Bumps: While these ordinarily do not require treatment, if they seem severe, hot or cold compresses (changed every five minutes) or a little cracked ice wrapped in several thicknesses of cloth, may be applied. Witch hazel or alcohol, either of

which should be diluted, may also be used for a severe bruise.

Burns: There are three degrees of burns, known as first, second and third degree.

A first degree burn is a simple reddening of the skin. For this just cover the area with a clean piece of linen to which has been applied a little vaseline or sweet oil. A cloth wrung from a solution of bicarbonate of soda (baking soda) also makes a comfortable dressing for a simple burn of this kind.

In a second-degree burn the top layer of the skin has been injured and a blister forms. This (in order to guard against infection) should be treated like an open wound, since the breaking of the blister permits the entrance of germs. Cover the area with a clean piece of gauze which has been soaked in a solution of boracic acid. Leave this on until dressed by a physician. Do not apply oil of any kind to a burn of this character.

In a third-degree burn the flesh is actually destroyed. This should be treated the same as a second degree burn (extra care being used to avoid infection) and no matter how small the area it should be treated by a physician.

Colic: This may often be relieved by giving in teaspoon doses every few minutes, one ounce of quite hot water into which a soda mint tablet has been dissolved. If this does not give relief an enema should be given.

Fractures: In infancy and early childhood broken bones seem to cause very little discomfort, except when the part is handled, and for this reason a fracture frequently passes unnoticed. After a child has had a fall, if when lifted or undressed he cries out, carefully watch him to see if he moves the affected part. And if he does not, take him at once to a physician.

Poisons: While a physician should be at once called, telling him, if possible, what poison has been taken, the child should without any delay be made to vomit. This can usually be accomplished by giving some warm water to drink, then forcing the index finger low into the throat. Syrup of Ipecac (if it happens to be in the home), one to two teaspoonfuls, will produce copious vomiting.

Prickly Heat: In summer this is due either to the heat or too much clothing. When it appears in winter it means always that the baby is too warmly dressed. Linen, silk or gauze underwear should be worn next the skin and soap should not be used on the inflamed area. The discomfort may be relieved by frequent sponge baths of starch, bran or bicarbonate of soda. (See page 83, Chapter "Baby's Care in Hot Weather.") In drying do not rub the skin but just pat it gently. The skin should several times a day be freely dusted with a powder composed of one ounce each of powdered starch and powdered oxide of zinc.

Eczema: There is no affliction of babyhood more

annoying or more persistent than eczema. There are different forms of the disease and any part of the body may be involved. The causes may be either external or internal. The external causes are always some form of irritation such as: Chafing from sudden exposure of the moist skin to the cold air or wind, hard water, strong soaps, woolen underclothing, lack of proper bathing and negligence in removing soiled diapers.

The internal causes are usually those relating to some form of indigestion. In the breast-fed, the mother's diet, exercise etc., must be regulated and in the bottle-fed the formula must be carefully regulated to the baby's assimilative ability. In run-about children attention must also be given to the diet, starchy foods generally being restricted or forbidden. Constipation must be looked after in all cases. It is most important that scratching and rubbing of the parts be prevented. One method of avoiding this in infants is a pasteboard splint at the elbow. This prevents bending the arm while otherwise allowing free use of the hands. A powder composed of starch and boracic acid, equal parts, will help to allay the itching. A child with eczema should always be placed under a physician's care.

Bites of Animals: Apply a dressing and keep it wet with a solution of 1-20 carbolic acid, until a physician arrives. (For carbolic 1-20 see pages 112-113, "How to care for Infectious Diseases in the Home.")

CHAPTER XVIII

IMPORTANT POINTS IN FEEDING DURING THE LATTER PART OF THE FIRST YEAR

By the latter part of the first year a baby begins to need food other than milk. Children who are fed on an exclusive milk diet after the ninth month are always found to be poorly nourished; they are pale, cross and irritable, the abdomen is usually prominent and the muscles are flabby. And having little resistance, they are an easy prey to the infectious diseases.

While keeping a child too long on a diet of milk is a serious fault, it is by no means the most prevalent. The greatest number of errors made are:—

Feeding too often, giving unsuitable food and lack of proper cooking of the suitable foods.

In beginning with solid foods the first principles should be graduation, step by step, supplying the food that can be digested and assimilated. The first variation toward a diet of solid food should be a small quantity of cereal jelly. But this does not mean any kind of boxed cereal carrying the directions "Cook fifteen minutes." Many of the cereal foods on the market are unfit for nursery use, because in the pro-

cess of refinement, which renders them attractive, much of their nutritious value is lost, especially mineral salts. The best cereal foods are those prepared from entire wheat, barley or oats. While cereals are rich in the constituents necessary for muscular development and the production of heat and energy, they must, in order to make them nutritious, be properly cooked. Otherwise, fermentation is apt to take place and cause disturbances. To cook cereals successfully one must have a double boiler of agate or porcelain. Place the desired quantity of water (with a little salt added) in the upper part of the boiler; allow this to come in direct contact with the heat and when the water has reached the boiling point add the cereal slowly, stirring constantly until it begins to thicken. Now, it should be placed over the boiling water and allowed to cook for a long time, being sure the water in the lower part of the boiler does not boil dry. Some cereals need longer cooking than others. Oatmeal, cracked wheat or barley grain, for example, should be cooked at least three hours or longer, while such finely ground grains as farina or cream of wheat, require only two hours. When coarse grain cereals are used, they should for the first few months be strained through a colander, thus making a cereal jelly. Cereals requiring long cooking should always be prepared a day ahead (late afternoon or night before), placed in the refrigerator and warmed over when needed.

"Why is it necessary to cook cereals such a long time?" is a question frequently asked.

The predominant ingredient in cereals is starch. Long cooking at a high temperature is necessary in order to break up and set free the starch granules, thus making a substance which is more easily digested.

We have said that the first variation toward a diet of solid food should be a small quantity of cereal jelly. By the time the child has learned to eat cereals well, his system begins to need some food rich in mineral elements, especially iron. These may be supplied by beef juice, broths, vegetables and milk vegetable soups.

Vegetables are often a neglected part of a child's diet. They are, however, very important, for not only are vegetables rich in iron, lime and other valuable salts, but they contain fat, carbohydrates and protein. In addition to all the important elements which vegetables furnish in supplying the body needs, the fibrous material which they contain aids the proper action of the bowels.

Beginning towards the latter part of the first year a small portion of green vegetable, thoroughly cooked and rubbed through a sieve (in order to break it up finely) may be served at least three times a week and later on, if well assimilated, once a day. While at first only one half teaspoonful should be given, this may be gradually increased up to a level tablespoonful at one year.

While spinach (all varieties) is one of the best vege-

tables with which to begin, carrots, asparagus tips, string beans, peas, squash, celery, knob celery, oyster plant and cauliflower are also suitable, but all must be carefully prepared.

By utilizing the water in which the vegetables are cooked, if only in part, the child is given the benefit of valuable substances which are extracted from the vegetable in cooking. When the child is older, vegetables when cooked until very tender may be served without being put through a sieve, merely mashing them very finely with a fork and serving simply with seasoning and butter. Let us emphasize here that vegetables must always be *cooked fresh the day they are used*. Young children are frequently made ill by being given warmed over vegetables, left from the day before. The same is true of apple sauce and stewed prunes, that is, they must be cooked fresh the day needed.

Egg is of essential value in the diet of a growing child, since it is rich in mineral matter, containing among other things, iron, calcium and phosphorus. It is on the other hand an exceedingly rich food and must be fed to an infant with care. The egg should be very soft boiled, mixed with stale bread crumbs and given in the middle of the day. At first only one half of an after-dinner coffee spoonful should be given and then only every second day. On the intervening day a small amount of scraped rare beef mixed with stale bread crumbs and moistened with beef juice,

may be given. It is best to wait until the end of the first year before beginning with egg.

About the fifteenth month a baked potato, stewed prunes, soft custards and baked apple may be allowed. The custards should be made with the minimum amount of sugar and the stewed prunes should be squeezed through a colander. A baked apple is not only one of the most easily digested desserts, but it is also very nourishing. When carefully selected and properly baked, it should be of the consistency of soft jelly. First, peel and core the apple. Then, after placing it in a pan which can be covered, add a cupful of water, sprinkle lightly with sugar, cover closely and bake in a moderate oven until quite tender. This can be served with top milk or thinned sweet cream.

At about the eighteenth month the diet may be enlarged to include the heart of a tender lamb chop or the white meat of chicken very finely cut.

In cooking meat for children it is important that it should be prepared with care. The juices may be retained with their full flavor by plunging the meat momentarily into boiling water, thus immediately coagulating the surface albumin. After this it is unnecessary to cook meat at an exceedingly high temperature, in fact, it is much more appetizing and digestible if cooked at a moderate temperature.

Many cuts of meat are too tough to be broiled for young children, so in order to avoid the connective tissue, these should be scraped. Here again care must

be exercised, for if meat is pressed firmly together it becomes tough and hard. To avoid this the meat cakes, lightly held together, should not be pressed between the two sides of a wire broiler, but should be put on top of the broiler and turned with a knife. Meat should at first be given sparingly, gradually increasing the quantity and variety during the next month or two.

In addition to orange juice, which may be given at the sixth month or earlier, uncooked fruits as an early addition to the diet should not be forgotten, since they not only offer food elements that are very necessary but help to regulate the bowels. Many people, since they have an idea that raw fruits are difficult to digest, refrain from giving them to children. Raw fruits are only indigestible when swallowed in hard pieces, so until the child has sufficient teeth with which to thoroughly masticate, they should be given scraped or mashed, care being used to have the fruit ripe but not over-ripe. Raw fruit should be given early in the day, preferably at breakfast, and not in the middle of the afternoon.

Ordinary breakfast toast should not be given to young children. If zwieback is not at hand, from bread at least a day old, cut very thin slices and let them dry out thoroughly in the oven. This may then be lightly toasted if desired.

The foods mentioned form not only a liberal well-balanced diet for the second year, but when enlarged

and varied, they will carry the child well into the third year.

Meals should always be given at regular periods and eating between meals should be the exception and not the rule.

There are some children, however, who will not do well without some light food, such as a graham biscuit and cup of broth in the middle of the afternoon. Never allow a child to select his own diet—consequently eating too much of one thing and refusing others which are necessary for his health and growth.

Do not force a child to eat. If within twenty or thirty minutes he does not take his food, remove it and let him wait until the next meal. If a child has every day a good bowel movement, an abundance of fresh air and exercise, and when offered only his regular meals is not hungry, he has need of a physical examination.

CHAPTER XIX

DIET SCHEDULES AND FOOD FORMULAS

WHILE as a rule at nine months of age a baby should be getting five feedings of approximately three parts of milk and one of cereal water (the milk being gradually increased so that the child at one year of age will be getting approximately whole milk), nearly all children who are strong and vigorous at this time require stronger food. For these a diet schedule such as given below may be followed:—

Diet from the Ninth to the Twelfth Month (to be Adopted Gradually)

6 A. M.	Milk	8 oz.	
8 A. M.	Orange juice or Pineapple " or Tomato "	} 1 oz.	Either of these should be carefully strained and diluted with a little water. The juice of stewed prunes may occasionally be substituted, particularly is this advisable if there is a tendency to constipation.
10 A. M.	Cereal Milk	1 to 2 Tbsps. 6 to 8 oz.	Cream of Wheat or Farina (cooked two hours). Give the cereal first, pouring over it an ounce or two of the milk.

2 P. M.	Milk	3 to 4	
	and	oz.	
	Beef-juice	2 to 3	
	or	Tsps.	With stale bread crumbs.
	Broth	2 to 4	(Mutton, chicken or
	or	oz.	beef) with rice or stale
			bread crumbs.
	Green vege-	3 times	In place of the beef
	table	weekly	juice.
			Begin with one-half tea-
			spoonful, thoroughly
			cooked and rubbed
			through a sieve—in or-
			der to break it up finely.
			The vegetable may, if
			well taken, be gradually
			increased to a level tea-
			spoonful at one year.
			The vegetable <i>must al-</i>
			<i>ways be cooked fresh the</i>
			<i>day used.</i>

After about two weeks the quantity of beef-juice may be gradually increased, until at the end of a month the child is getting 6 teaspoonfuls. The maximum quantity up to a year should not be more than 3 tablespoonfuls or $1\frac{1}{2}$ ounces. The beef juice should be given one day and the broth the next.

In preparing the broth, finely chopped vegetables, such as carrots, peas, asparagus, or spinach may be cooked with the meat, but after the cooking has been completed, all these must be strained away, leaving the broth clear. *Be sure* to skim off the fat before serving.

6 P. M.	Cereal	1 to 2	Cream of Wheat or Far-
		Tbsps.	ina (cooked two hours).
	Milk	6 to 8	Give the cereal first,
		oz.	pouring over it an ounce
			of two of the milk.

10 P. M. Milk 7 oz.

Note.—Just as soon as the child is willing to give up the 10 P. M. feeding and sleep through from 6 P. M. to 6 A. M. the 10 P. M. milk should be distributed through the other feedings.

According to all leading authorities, from the twelfth to the fifteenth month, a child should be fed five meals daily, beginning at 6 A. M. and ending at 10 P. M.; from the fifteenth to the eighteenth month, four times daily; from the eighteenth to the twenty-fourth month, three meals daily, with bread and butter, a glass of milk, cup of broth or some milk vegetable soup in the middle of the afternoon.

After a child has reached his second year he will thrive better if allowed only three meals daily with possibly a cup of broth or a graham cracker in the middle of the afternoon.

The five meals schedule (12th to 15th month) could be arranged as follows:—

6 A. M.	Milk	8 to 9 oz.	
8 A. M.	Fruit Juice		Juice of an orange or an equal quantity of prune juice.
10 A. M.	1. Cereal Jelly, 2 Tbsps.	(Oatmeal, Wheat or Barley)	
	2. Milk	8 oz.	Use part of the milk over the cereal.
	3. Bread and Butter		Zwieback or Graham crackers or small slice of stale bread and butter.
2 P. M.	1. Broth or Milk Vegetable Soup	6 to 8 oz.	Beef, chicken or mutton, with rice or stale bread crumbs. (Do not use meat extracts.)

2 P. M. (cont'd)	or Meat or Egg	1 to 3 tbsps.	Scraped rare beef, mixed with bread crumbs and moistened with beef juice.
			Soft boiled (begin with less than one half) and do not give oftener than every second day.
	2. Vegetable	1 tbsp.	Green vegetable (put through sieve)
	3. Bread and Butter		Stale bread or Zwieback and butter.
	4. Milk	4 oz.	if wanted
6 P. M.	Same as 10 A. M. except cereal may be varied by using farina or cream of wheat.		
10 P. M.	Milk	6 to 7 oz.	

From the 15th to the 18th Month

6 A. M.	Milk Bread and butter	9 to 10 oz.	Stale bread or zwieback and butter.
9 A. M.	Fruit juice		The juice of an orange or 3 ounces of prune juice.
10 A. M.	Cereal	2 to 3 tbsps. (strained)	The best cereals to use are oatmeal, hominy or cornmeal (cooked for at least three hours in a double boiler) or a fine grain cereal such as Wheatena, Farina or Cream of Wheat, cooked

for two hours. Serve with milk and a small amount of sugar, or with butter and sugar, or with butter and salt. The dry cereals (Corn Flakes, Shredded Wheat etc.) may be *occasionally* given, but not regularly. Twice as much must be given as of the cooked cereals.

	Milk	8 to 10 oz.	Stale bread or zwieback and butter.
	Bread and Butter		
2 P. M.	1. Broth	6 to 8 oz.	Mutton, chicken or beef, into which has been stirred rice or stale bread crumbs.
	or Milk Vegetable Soup or Meat	1 Tbsp.	Scraped beef mixed with bread crumbs and moistened with beef juice, or minced with white meat of chicken
	or Egg		Soft boiled or poached
	2. Vegetable	1 to 2 tbsps.	Green vegetable (put through a sieve).
	3. Potato	2 tbsps.	Baked or mashed, or rice (boiled two hours in double boiler).
	4. Bread and Butter		Stale bread buttered (whole wheat or white Zwieback or Graham crackers
	5. Dessert	1 to 2 tbsps.	Custard made with the minimum amount of

sugar, junket, cornstarch or rice pudding (made without raisins) baked apple, apple sauce or stewed prunes.

- 6 P. M. Same as 10 A. M., except the cereal should be varied and cooked fruit may be given in addition.
- 10 P. M. Drink of milk, if wanted. If the child is satisfied without this, the milk should be distributed through the other feedings.

From the 18th to the 24th Month

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|--------------|---|---|
| 6 to 7 A. M. | 1. Cereal | Cornmeal, oatmeal, hominy, Cream of Wheat, Farina, Wheatena with milk and sugar, butter and sugar or butter and salt. The cereal should be cooked the night before. |
| | 2. Bread and Butter | Stale bread, which may be improved by drying in the oven or toasting. (Do not give hot, fresh or fancy breads.) |
| | 3. Milk | Drink of milk. |
| 10-11 A. M. | Fruit Juice | Juice of an orange or three ounces of prune juice |
| 12.30 P. M. | I. {
Soup
or
Meat

or
egg | Purée of lentil, peas, beans.

Scraped rare beef or finely minced chicken or heart of lamb chop finely cut.

Soft boiled or poached. |

	2. Potato or Rice	Baked, boiled or mashed Boiled two hours in double boiler.
	3. Green vegetables	2 tbsps. Finely mashed (Spin- ach, carrots, asparagus, cauliflower, young peas or squash, string-beans, celery, knob celery and oyster plant.)
	4. Dessert	1 to 2 tbsps. Apple sauce, prune pulp, baked apple, custard, cornstarch, plain rice pudding or junket.
	5. Bread and Butter	Buttered stale bread, plain or toasted.
3 P. M.	Graham cracker, bread and butter or broth—if demanded.	
5.30 P. M.	1. Cereal	1 to 3 tbsps.
	2. Milk	8 to 12 oz.
	3. Bread and Butter	One small slice of zwie- back
	4. Cooked fruit	1 tbsps.
10 P. M.	Milk, if wanted	

Diet from the 2nd to the 4th Year

Breakfast 7 A. M.	1. Cereal	3 to 4 tbsps.	Give oatmeal, hominy, cracked wheat, cornmeal (cooked at least three hours the afternoon be- fore) or Farina, Cream of Wheat, Wheatena, Pettijohn's or Malt Breakfast food (cooked for 2 hours).
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	2. Milk or cocoa		The cocoa should be made by using one tea-spoonful of cocoa paste to one cup of milk (see recipe).
	3. Bread and Butter	1 to 2 slices	Stale or toasted. Whole wheat, Graham or White bread.
10 A. M.	Fruit Juice		Juice of an orange or four ounces of prune juice (unless fruit has been given at breakfast). Fruit juice may be given before breakfast (on waking).
Dinner 12 noon.	1. { Soup or Meat or Egg		Milk Vegetable soup, strained soups or broths.
		1 to 2 tbsps. or 2 oz.	Beefsteak or roast beef (rare) or lamb chop, chicken or fish. The meat should be broiled, boiled or roasted, <i>never fried</i> . Do not give pork, corned beef, veal, kidneys, greasy stews or gravy made from grease.
	2. Fresh Vegetables	2 to 3 tbsps.	Such as: Spinach, chard, beet tops, greens, peas, string beans, squash, stewed celery, knob celery, oyster plant, cauliflower, stewed carrots, asparagus tips and boiled onions
	and a Starchy Vegetable	2 tbsps.	Such as: Baked, mashed or creamed potatoes,

or
Rice, hominy or macaroni. *Do not give* cheese with the macaroni *and do not give* corn, tomatoes, cabbage, fried egg plant or cucumbers.

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|---------------------|---------------|--|
| 3. Bread and Butter | 1 to 2 Slices | Stale or toasted. |
| 4. Dessert | 1 to 2 tbsps. | Apple sauce, baked apple, stewed prunes, rice, tapioca, or bread pudding (plain), junket, custard or cornstarch pudding. |

Supper
6 P. M.

- | | | |
|-------------------------------|---------------|---|
| 1. Cereal
or
Milk Toast | 1 to 2 tbsps. | As described under breakfast.

Made from 1 to 2 slices of stale bread. |
| 2. Cooked Fruit | 2 to 3 tbsps. | Or junket, custard, cornstarch or plain vanilla ice-cream (if these have not been given at any other meal). |
| 3. Bread and Butter | 1 to 2 slices | Stale or toasted. |
| 4. Milk or Cocoa | 1 cup | |

If the child is very hungry, he may have an egg, soft-boiled or scrambled (milk) but this should be when he has not had egg for breakfast or dinner.

Too much milk should not be given. One quart a day at most is sufficient. Tea, coffee, soda water, wine, cider, etc. should never be given.

RECIPES AND FOOD FORMULAS

Cereal jelly is made by cooking in a double boiler for three hours, two ounces of oatmeal, cracked wheat or barley grain, in one pint of water, adding sufficient water from time to time to take the place of that which has steamed away. When the cooking has been completed, a thin paste should be formed. While hot this should be forced through a colander to remove the coarser particles. When cold there is formed a semi-solid mass. Cereal jelly should always be prepared the day before it is required.

Cereals: Oatmeal, cornmeal or hominy. One cupful requires about four cupfuls of water. Cook three hours in double boiler.

Rolled Oats: One cupful requires about two cupfuls of water. Cook three hours in double boiler. Wheat preparations, such as cream of wheat, wheatena or farina, require from four to six cupfuls of water. They should be cooked in a double boiler for two hours.

To the boiling salted water in the top of the double boiler, add the cereal very slowly, stirring steadily. Allow it to cook for about five minutes in direct contact with the heat, then place over the lower part of the boiler (which should contain boiling water), and allow it to cook for the required number of hours.

A level teaspoonful of salt to a cupful of cereal will usually be sufficient, but it is well to be sure that

mushes are properly salted, as failure in this respect may lead children to dislike them.

Beef Juice: This is best obtained from the top of round steak. After trimming off fat, put in boiler and sear on both sides. Then cut into small cubes and squeeze out juice by means of meat press or lemon squeezers. Salt should be added to taste.

Broths: Remove the meat from the bone, eliminating all fat. Cut into small pieces, then place the meat and the bone in a saucepan of cold water (one quart to a pound of meat), not including weight of bone. Let stand in the cold water for one-half hour. Then after bringing to the boiling point, allow it to cook slowly for at least three hours. Water should be added from time to time, so when the cooking is completed there will remain about one half the quantity, namely—one pint of broth. Remove the meat and bone and when cool remove the fat. The broth should then be strained and salt added to taste. Finely chopped vegetables may be cooked with the meat, but these also must be strained away, when the cooking has been completed.

Scraped Beef: Cut round steak thick and sear quickly the outer side over a brisk fire. Then after splitting the steak with a sharp knife, scrape the pulp from the fibre. This is best accomplished by means of a dull instrument such as a spoon.

Milk Vegetable Soups: These are made from vegetables such as asparagus, peas, beans, lentils, celery,

carrots, spinach, kale or chard, cooked thoroughly and put through a sieve, and milk slightly thickened. To one cupful of milk use one-half tablespoonful of flour, salt and one-third cupful of vegetable which has been put through a sieve. Drop the butter in the upper part of a double boiler, allow it to bubble (but not boil) stir in the flour little by little, then add the milk. When this is hot, stir in the vegetable.

Stewed Prunes: The prunes should be thoroughly washed and then soaked over night in cold water. Cook in the same water (in which soaked) slowly until very soft. When the cooking has been almost completed, add a little sugar.

Twice cooked bread a substitute for zwieback: This is prepared by allowing slices cut from stale bread to dry out thoroughly in the oven. The oven door should be left open while the bread is drying out in order that it may not brown. After the slices are thoroughly dry they may be lightly toasted, as desired.

Pulling a loaf of bread to pieces is another method, having the advantage of making the bread lighter in texture. The crusts may be torn off from all but the ends of a loaf, in one piece. They should then be torn into pieces. For the inside of the loaf, first make a small cut in order to start the tearing. Then tear first across, afterwards tearing each half into about six pieces. Dry out in the oven and then toast lightly as needed.

Cocoa: As cocoa contains a great deal of starch, it requires thorough cooking and in order to accomplish this without destroying any of the properties of the milk, one should first make a stock: To two even tablespoonfuls of cocoa, add four teaspoonfuls of sugar and one cup of cold water. In adding the cold water care should be used to first make a paste with a little of the water, mashing all the lumps before adding the remainder of the water. Allow this to boil (stirring constantly to prevent burning) until the mixture becomes thick enough to just drop off the spoon. This stock can be made up in any quantity desired and kept on hand, since if kept in a covered jar in refrigerator, it will keep a long time. With the stock already prepared, all that is necessary for a cup of cocoa is to heat a cup of milk until it is just ready to bubble, stirring in one teaspoonful of the cocoa paste.

CHAPTER XX

HOW TO COOK VEGETABLES FOR CHILDREN

IN order that the valuable mineral properties may as nearly as possible be preserved and that they may be easily digested vegetables for young children should be very carefully prepared.

We mention spinach first. This deserves foremost consideration, since for young children, spinach is one of the very best vegetables, containing as it does a high percentage of mineral salts, such as calcium, phosphorus and iron. While ordinary spinach is not easily available for very long periods, there is on the market another variety—a comparative newcomer—that may be had throughout the summer. This is called New Zealand spinach. Recent experiments in the Laboratories of the Rockefeller Institute for Medical Research and the Babies Hospital, have proven that this variety of green vegetable, while not of the same family as ordinary spinach, is particularly rich in its iron content. In fact of all the vegetables tested, such as: Spinach, New Zealand Spinach, Young Carrots, Onions, String Beans, Asparagus and Potatoes, New Zealand spinach was found to have the highest proportion of iron.

For a leafy vegetable, such as spinach, the first consideration is proper cleansing from grit and dirt. And this is not as easy as it would seem. The most satisfactory way to cleanse any leafy vegetable is to wash leaf by leaf under running water. When this is not possible it should be washed in a large volume of water (using several waters) and should be lifted from one vessel to another, since if the water is merely poured off, the grit and sand will sink to the bottom. When the spinach has been lifted to another vessel, care should be exercised to see that no grit and sand are left in the bottom of the vessel to which it will again be transferred. Until ready to be cooked it should stand in cold water.

There are two methods of cooking green vegetables, one by boiling and one by steaming. In connection with the test in the Laboratories of the Rockefeller Institute for Medical Research and the Babies Hospital, it was found that in the preservation of the mineral salts, steaming was by far the most economical method of cooking vegetables. Steaming is accomplished by placing the vegetable in a tightly covered receptacle with a finely perforated bottom and fitting this closely over the top of a vessel holding boiling water. When a steamer is not available, this method of cooking may be accomplished by the use of a double boiler. Vegetables are prepared as usual, drained and placed with no additional water in the inner part of the boiler. For cooking them after this manner more

time should be allowed. Spinach requires about thirty minutes to cook by steaming. When spinach is boiled, a very small amount of slightly salted water should be used, just enough to little more than cover the bottom of the vessel, since considerable water always clings to a leafy vegetable such as spinach and in the process of cooking this is soon added to the volume of water. When tender, pour over it cold water and drain. The spinach should then be chopped very fine and put through a coarse seive. Add a small amount of fine bread crumbs, made from stale bread, and a little butter and salt. Before serving to the child it should be reheated.

Carrots should, to begin with, be young and tender. In preparation, they should be scrubbed with a brush and washed through several waters. Carrots should be cooked in slightly salted water and if before they are tender the water cooks away, more should be added. When very tender, remove from the water, drain and force through a sieve. After adding salt, melted butter and bread crumbs, they should, like spinach, be reheated before serving.

Asparagus should be cooked in a small amount of slightly salted water until very tender. Then after removing the stalks from the water tear the tender portion from the stalk by drawing a fork lightly through it toward the tip. A sauce should then be made by using about two tablespoonfuls of the water in which the asparagus was cooked, an equal quantity

of milk, a half teaspoonful of flour, salt and butter. Mix this sauce with the asparagus pulp.

Peas should be cooked in salted water until quite tender. They should then be drained and for very young children should always be rubbed through a sieve, since the skins no matter how tender they may seem, are very apt to be indigestible. For peas, a sauce the same as for asparagus should be made, except that fine bread crumbs may be added. This sauce should be mixed with the pulp from the peas and before serving, reheated.

String beans when used for children should be young and tender and care must be exercised to remove the "strings" which are sometimes attached to some species of beans. They should be cooked in salted water until sufficiently tender to mash easily with a fork. After draining serve with the addition of a little salt and melted butter.

Squash should to begin with be very young and tender. It should be cooked in slightly salted water until tender enough to fall easily to pieces. After draining it should be forced through a colander and served with salt and butter.

Only the tender portion of celery should be used for young children. This should be cooked slowly in slightly salted water until quite tender. After thorough draining, make a sauce by using a small amount of the water in which the celery was cooked and an equal quantity of milk, one-half teaspoonful of flour,

salt and butter. This should be mixed with the finely mashed celery.

Cauliflower after it has been broken up and thoroughly washed should be cooked uncovered in a large amount of water. This vegetable requires about a quart of water to each head of cauliflower. The water should be salted and should be boiling when the cauliflower is added. When tender it should be drained and forced through a coarse sieve. Serve with a sauce made from equal quantities of milk and water (using the water in which the cauliflower was cooked) salt, flour and butter.

Boiled onions may be added to the diet after the third year. At this age it is no longer necessary to put any of the vegetables through a colander, with the possible exception of peas, the skins of which may disagree with some children. Cooking until tender and mashing with a fork is usually sufficient.

If the supply of fresh green vegetables is not plentiful, the water or juices in which they are cooked should always be saved. This may be utilized partly in preparing a sauce for those vegetables served in this way and partly in preparation of creamed soups, using for this purpose the vegetable stock in equal quantities with milk.

In utilizing the water in which the vegetables are boiled, it should always be remembered that this contains valuable vitamins, which in the process of cooking have been extracted from the vegetable. Vita-

mines are what may for a better term be called "mysterious food elements." They are, so far as is known, apparently not food elements themselves, but are necessary for the utilization of food.

CHAPTER XXI

COLDS—A SERIOUS MENACE

A WISE saying of the ancients was, "*Obesta principiis*" (Prevent the beginning). Nowhere is this more applicable than to the common colds of childhood.

Do not underestimate colds. They are the greatest enemy of vitality. Next to intestinal disturbances, inflammation of the air-passages due to colds is the greatest menace to the health of infants and children.

Every cold in a young child should be seriously considered and an effort made to combat it. Aside from the immediate debility, an acute cold opens the way for the entrance of more serious disease. There is a possibility of such complications as bronchitis, pneumonia, middle ear infection and tonsilitis. Also frequent colds and throat affections are likely to cause enlargement of the glands of the neck and these may become infected with the tubercular bacillus.

The first step in the prevention of a cold is to ascertain if the child is breathing properly. Proper breathing can not be effected if there is pressure from adenoids and greatly enlarged tonsils. If there is any abnormality of the nasal membrane or of the nose, it should be corrected.

Most colds are infectious and are transmitted through contact. If we were not so careless about them, they would not be so common and apparently so unavoidable.

As young children are very susceptible, it is wrong that they should be exposed by taking them into crowded cars, stores or places of large assemblage where it is impossible to avoid contact with coughing and sneezing people. Their susceptibility can be more readily understood when we take into consideration the fact that the blood of a child is not equipped with the same fighting power as that of the adult. Children have fewer red blood-corpuscles, making them prone to anæmia, and while the white blood corpuscles are more numerous, relatively few of them have germicidal power.

If properly clothed, the outdoor air does not predispose a child to a cold as much as the indoor air. Of course chilling, whether indoor or outdoor, will predispose to a cold.

The habit of leaving the robes out in the carriage and then using them without warming is a fruitful source of colds for young children. When these thoroughly chilled robes are placed about the child, they do not become comfortably warm until he has imparted to them considerable heat from his body, which is a drain upon his vitality.

When going out on a cold, windy day, the ears of young children should be protected from exposure to

cold winds. The mother should always be on the alert to see that the sleeping child is not placed in a position where a pronounced and direct draft will strike him.

The feet of young children should be well protected by substantial shoes, and, when there is thawing snow, by rubbers, as melting snow is very penetrating.

Try to keep the feet warm, for if they remain cold for any length of time, the blood vessels contract, and the flow of blood which should be in the lower extremities is sent to the head and other parts of the body. This makes an uneven distribution of the circulation and a condition of lowered vitality which invites the entrance of germs, causing inflammation of the air-passages.

Overheating is a common cause for the development of colds in children. When a room is overheated, there is not enough moisture left in the air. By the constant breathing of this air, the mucous membranes become too dry, thus causing an irritation or congestion of the nostrils, and the least irritant that may come in contact with the mucous membrane may cause at least a simple inflammation. This congested area may then at any time pick up and harbor or cease to kill germs.

It is important to remember that the heat production in a child is very active and his need for oxygen much greater than in the adult. The mother should not depend upon her own sensations as a guide to the qual-

ities of the atmosphere, especially if she is of sedentary habits.

When the weather is so cold that a comfortable temperature can not be maintained with the windows open, outside air should be occasionally admitted by opening wide the windows and airing the room for a few minutes. In very severe weather it is a good plan to air the nursery whenever the baby is taken into another room. An open grate in the room is very desirable, not only because it permits of extra heat when necessary, but because it helps to keep the air in the room in circulation.

Young children who are accustomed to fresh air from early infancy, and who are fed properly, are much less liable to colds.

Every mother should bear in mind that the appearance of a cold demands careful attention, not only because it may develop into some of the respiratory diseases, but because certain contagious diseases appear first as a cold in the head.

CHAPTER XXII

GUARDING BABY'S EARS

IT is a sad fact that over thirty per cent. of the inmates of our institutions for the deaf are children who have an acquired deafness, which, if taken in time, might have been prevented. In addition to this fact, physicians are constantly coming in contact with large numbers of adults suffering from a hopeless progressive deafness, which undoubtedly could have been prevented, if during early childhood, when some intercurrent infection or one of the infectious diseases started the trouble, they had received proper care.

The organ of hearing is a most delicate piece of mechanism, quite easily getting out of adjustment. This is especially true of infants and children up to the age of five years.

Middle ear inflammation is at the root of most cases of deafness. So assailable is the middle ear of infants, sometimes the mere cutting of a tooth, intestinal disturbance or an attack of tonsilitis may be the cause of serious middle ear infection.

The prevention of acquired deafness rests upon:—

The care of the ears after the acute infectious diseases and after acute febrile disturbances

The care of the teeth and the removal of diseased tonsils and adenoids

Prophylaxis of the nose and throat

The careful testing of children's ears

Of all the affections of childhood, the contagious diseases, particularly scarlet fever, measles and meningitis, are most destructive to the ear. Many deaf mutes and a large proportion of people partially deaf owe their disability to one of these diseases. Middle ear infection may also follow diphtheria, grippe, whooping-cough and typhoid fever. Any ear infection occurring after grippe is especially to be feared, as the virulence of the infecting germs may result in mastoiditis.

We have said that of all the affections of childhood, scarlet fever, measles and meningitis were most destructive to the ears. The histories of progressive deafness taken by physicians reveal the fact that in the majority of cases the trouble began in childhood during or after one of these diseases. And does this mean that during the illness the ears were neglected?

By no means. It means, in most instances that during the acute stages of the disease the ears have been cared for and remedial measures used. But after the acute stage when the inflammation has subsided and the suppuration ceased, the slight defect of hearing has passed unnoticed. This is particularly true of scarlet fever and measles. For with these there is often some remaining process left by the disease

(some local trouble) which, when uncared for, leads to impairment of hearing in later life. In other words, much progressive adult deafness results from the neglect of local trouble in childhood following one of these diseases. After recovery from measles or scarlet fever, children should be taken to an ear specialist in order that any defect in hearing may be detected and remedial measures used in an effort to bring it again to normal.

Bad teeth, adenoids, enlarged and diseased tonsils are predisposing causes of ear infections. They harbor innumerable disease germs, causing inflammation and constant irritation to the mucous membrane of the nose and throat. And since the middle ear of infants is separated from the nose only by a short wide tube, it is easy to see how this infectious material may by violent coughing and sneezing be forced into the ear. It must also be remembered that the tonsils are in close proximity to the Eustachian tubes (canal running from the middle ear cavity to the pharynx) and from direct pressure on these may cause impairment of hearing. Diseased tonsils and adenoids are responsible for many of the ear complaints of early childhood which lead in later life to deafness. For this reason when a child begins to show signs of ear trouble he should be examined by a physician for possible adenoid growths and diseased tonsils. While the concensus of medical opinion favors leaving the tonsils (unless there is evidence of impaired hearing)

until the end of the second year, if adenoids are present, they should, no matter what the age of the child, be removed.

The acuteness of a child's hearing depends upon the normal balance in the middle ear. This balance is maintained only when the tubal muscles are at proper tension, thus automatically, with each act of swallowing, massaging the drum and the small bones of the ear. And what are the factors interfering with this normal balance?

An unclean condition of the nose and throat. In other words, an accumulation of mucus tending to an engorgement of the Eustachian tubes (canal running from middle ear cavity to pharynx). The child's nose should be cleansed as a part of the daily toilet and as soon as the growing intelligence permits, he should be taught how to properly blow the nose. For this:—

Tell the child to take a deep breath (filling the chest with air) then by placing one finger upon the outside of the nostril, thus obstructing the passage, with a violent expiration force the air from the chest through the open chamber of the nose, thus removing the offending discharge onto the handkerchief. The same process should then be repeated on the opposite side. If, when blowing the nose in this manner, air is felt to force itself into the ear, the nostrils should not then be held. While it is a simple matter when the child's health is up to par to keep the nose and throat clean, if from

any condition such as rickets, marasmus, malnutrition or devitalizing diseases, his vitality has become lowered, this is much more difficult, since such a child is more prone to troubles in the upper air passages. Children of this class should be placed under the care of a physician, not only that the health may be brought up to par but that he may advise some local treatment for keeping the nose and throat clean.

During early child life, the hearing should be variously tested. One way of accomplishing this is to speak to the child from an ordinary distance, saying something that he would be interested in hearing, using a tone of voice a little lower than usual. If there has been any acute condition of the nose and throat or of the ear itself, the child should, in order that hearing tests may be thoroughly made, be taken to a physician. Likewise, a child slow in learning to talk should have a thorough examination. For frequently this is due to the fact that he does not hear well. Many a child thought to be backward in his school work is not really stupid, but loses interest in his studies because it is a great effort for him to hear.

Earache is usually the first danger signal of ear trouble. While many parents accept this as a necessary evil, earache is really a symptom of an active and perhaps serious infection and calls for instant attention. Convulsions in babies are thought to be caused more often by earache than any other cause.

This is due to irritation of the brain membranes. And now let us go a little further into the reasons as to why earache or any condition affecting the ear should not be neglected.

When the middle ear becomes infected its various compartments, including the mastoid cells, are soon filled with a serum or pus. This broken-down material in seeking an exit presses against the drum-head, causing earache. As the drum-head of an infant is frail it usually yields to this pressure and breaks and the ear begins to discharge. Now right here is often the beginning of life-long trouble. For quite frequently such advice as "leave it alone, he will outgrow it" is given to mothers. This course is erroneous and dangerous. It is right that the pus and infected material should drain from the ear but the child should be under the care of a physician during this time. Here are some of the things which are liable to happen:

First. Drainage may not be free enough, in which case the child would continue to have pain.

Second. There is danger of reinfection and the ear may discharge indefinitely, which is almost sure to mean impaired hearing.

Third. The perforation may heal without the cause of the inflammation having been removed, thus other attacks might follow until the condition became chronic, during which periods the ear-drum may become thickened, causing in time either partial or total deafness.

Fourth. If the healing process should take place be-

fore the ear has properly drained, still leaving a focus of infection, there is sure to be another attack with the resulting pus and exudate again pressing against the ear-drum, but the healing of the first perforation has naturally left scar tissue so the ear-drum may not give way as easily as it did the first time.

What happens then?

All this broken down material which is trying to get out must seek another exit. This it usually does through the mastoid cells. In this case the inflammation develops into mastoiditis which means at the least a serious operation.

Should the doctor order the discharging ear to be irrigated for the purpose of cleansing the canal, this should be very carefully done. The tip of the syringe should be very small. The glass part of a medicine dropper makes an excellent tip for this purpose. If there is not anything better at hand this can be attached to an ordinary douche bag. But simply squirting water at the ear with the tip an inch or more away from the auricle will not bring success. The ear to be treated should be in a good light. The bag should be suspended not more than two feet above the ear in order to allow a gentle flow with but little force. Then with the left hand draw the lobe of the ear upward and backward—in order to straighten the canal—while with the right hand introduce the tip of the syringe slightly into the canal, pointing the nozzle upward so the fluid will flow over the drum-head and

not directly against it. The tip of the syringe should be held lightly in the fingers in order that it may be quickly withdrawn upon the slightest movement. A kidney shaped basin protected by a towel should be held by a second person close to the neck and just under the ear. An ordinary fountain syringe with small black rubber tip may also be used for irrigating the ear.

After an irrigation, the canal of the ear should be dried with sterile cotton.

For several weeks after an attack of middle ear infection, extra precautions should be taken against exposing the child's ears to cold air and wind. When he is taken out, dry cotton should be placed in the ears; this should, however, be removed as soon as he reaches home, for if left longer than a few hours, it will cause irritation and will also produce an unnatural amount of heat.

A beginning ear infection can frequently be aborted by the use of dry heat externally in some form, such as a hot water bag, salt bag or hot flannels. It is perfectly safe to use either of these while waiting for the arrival of the physician.

The ear in health requires simple cleanliness, such as washing the external ear with a soft rag and carefully drying it as well as the creases back of the ear. Never attempt to clean the ear canal by the use of matches, tooth picks or hair pins used as probes for digging out wax. Wax is provided by nature to keep

the inside of the ear in good condition and its removal is provided for normally by the action of the lower jaw during mastication. So do not attempt to remove any wax except that which has passed into the outer ear and can be reached by a damp cloth stretched over the tip of the little finger.

CHAPTER XXIII

CHILDREN'S TEETH—EVEN THE BABY ONES SHOULD HAVE THE UTMOST ATTENTION

It is now universally conceded that the most conspicuous defect of the school child is decayed teeth. In fact, this imperfection generally outranks all other defects combined. One of the recent reports from the Division of Dental Hygiene, Department of Health of a Connecticut city, states that it is difficult to find two school children out of a hundred with a sound set of teeth, that the average is seven cavities per child and that of all children examined within the past five years malocclusion (abnormal closing of the upper upon the lower teeth) was present in ninety-eight per cent. And what does this mean?

It means that while practically every branch of medical science has brought forward the fact that greatly varying and sometimes serious or fatal systemic diseases are due to oral infection and oral disease; that while the student of mental deficiency and the educator have called attention to the dental anomalies and anomalies of the dental arches, etc., in mental deficiency and other conditions; it means that while all have repeatedly shown that the value of thirty-two sound teeth

in normal position cannot be measured, there is still a world-wide lack of knowledge as to the relation of sound teeth to good health.

Dental clinics in connection with the public schools have had a marked effect in promoting the health of school children. They have not only increased the average attendance at school—since eighty per cent. of absences in the third, fourth and fifth grades are due directly or indirectly to toothache—but have in many instances reduced as much as fifty per cent. the condition of retardation among pupils. And yet both the medical and dental world are now emphasizing the fact that without attacking the trouble at its source, the work of the dental clinic in connection with the school is merely palliative. In other words, dental decay, like other disease conditions, is due to certain known causes, and the way to mitigate the evil is not alone in repairing the damages as they occur, but in preventing them. Physicians in private practice have repeatedly proven that from eighty to ninety per cent. of dental caries, commonly known as dental decay, can be prevented.

Few of us realize the significant fact that if a child can be brought to the age of fifteen or sixteen with sound teeth in normal occlusion, he will very likely go through life without any serious dental defects. For not only has he established the habit of keeping them clean and using them prudently, but the teeth themselves, due to this care, will have acquired a density

and firmness, which will render them more capable of resistance to the ordinary causes of decay.

Sound and healthy teeth in adult life depend upon four main principles :

- Diet in infancy and childhood
- Prevention of pernicious habits in infancy
- Care of the deciduous teeth
- Care of the teeth during the early school life

First, we must bear in mind that each tiny tooth of both the deciduous and permanent sets are embedded, or partly so, in a cavity of the jaw bone, even at birth. The teeth develop and grow with the body. Usually, at about the seventh month of life, one group is ready to cut through the gums; other teeth coming through at different intervals until the child is two and a half years of age when, if development has been along normal lines, he should have the entire set which consists of twenty teeth.

The diet during the first nine months of life has a marked effect on the growing and developing teeth. Statistics gathered within the last few years by the Departments of Health of various cities, after examination of the teeth of thousands of children, and tabulating the diet in infancy, have emphasized some significant facts:—

- First. That breast-fed babies stand the best chance of developing strong and beautiful teeth.
- Second. That babies fed on a properly modified cow's milk with the early addition of orange juice

(supplying in particular mineral matter) stand the next best chance.

Third. That a diet in which some of the essential constituents are lacking, that is, one high in carbohydrates and low in fat, protein and mineral matter (as is the case with condensed milk when used alone) given during the period of infancy when the teeth are developing and calcifying, affects their development and subsequent soundness. In other words a poorly balanced diet in infancy renders the teeth more susceptible to decay in later life.

The child should not be kept too long on soft foods for the vigorous exercise of biting and chewing is essential not only for the development and health of the teeth but for enlarging and strengthening the jaws.

At the end of the first year more or less dry, hard foods should be daily introduced into the diet. Begin by giving zwieback, dry, hard toast or crust at the end of the meal, adding from time to time strips of tough meat and bacon rind, from which the child may chew the juice. Later as he grows older fresh fruits and vegetables, such as apples, grapes, celery, radishes and green salads may be added. Such foods as these not only exercise the teeth but cleanse and polish them. As acid fruits produce a highly alkaline saliva, they, rather than sweets, are an ideal food with which to finish the meal. That is, the resulting flow of highly alkaline saliva (when fruit is taken at the end of the meal) counteracts the high acid potentiality of sweets and starches which is so harmful to the teeth.

Such pernicious habits as thumb sucking and the use of the "pacifier" are a cause for deformity and irregular teeth. They tend first of all to cause abrasion of the oral mucous membrane and to deform the mouth. The constant suction is liable not only to deform the developing alveolar ridges, but to cause a narrowing of the palatal (palate) arch, and to thrust the upper jaw forward, thus causing the jaws not to bear the proper relation to each other and, consequently, the teeth not to meet correctly.

As soon as the first molars come through, which is usually from the twelfth to the fifteenth month, the baby's teeth should be gently cleansed each day with a soft brush, care being taken not to injure the delicate tissues, and thereafter they should be carefully watched for signs of decay. As the baby grows into childhood, he should be taught the daily care of his teeth. It is important that the baby teeth should not be lost or extracted prematurely. This may cause deformity of the soft, easily moulded jaw and it certainly permits shrinking and warping, leaving insufficient room for the new and larger teeth, thus causing them to be crowded and pushed forward. Many physicians and dentists believe that premature extractions by reducing the diameter of the anterior nares (nostrils) may prevent normal nasal breathing.

When a child shows even the slightest abnormality of the jaws or irregularities of the teeth, he should at once be placed in the hands of a skilled dentist. For

these are deviations that may easily be corrected while the bones are soft and pliable, that is, during the first few years of dentition, but, if neglected, may result in an exaggerated deformity of the face or jaw. Indeed such deviations, at first appearing as only trivial, often result in a high palatal arch with abnormality of the nasal septum, producing nasal deformity.

Beginning about the sixth year, the first set of teeth are gradually replaced by the second. If at this time, as often happens, the milk or deciduous teeth show no tendency to come out, the child should be taken to the dentist, for should the first teeth be allowed to remain in the jaw beyond their time, they will crowd back the second and cause them to be misshaped and irregular. Irregular teeth, in addition to impairing one's good looks, render the thorough cleansing of the mouth very difficult, thus offering greater opportunity for the formation of cavities.

That decay of the teeth is easily induced and is most rapid between the ages of six and fifteen has been proven time and again by the examination of the teeth of thousands of school children. While this may to some extent be due to the fact that the most rapid body growth takes place between these periods and that many children do not get in their food sufficient lime salts to meet the demands of the developing teeth and bones, we may also put it down as an axiom that *a clean tooth never decays*. And here it may

not be amiss to state the initial cause of dental caries.

The teeth, as we know, are protected by a hard covering of glossy enamel. This is their armor of health and as long as it remains unbroken they do not decay. Now how does an unclean mouth affect this enamel?

We know there is no known way of keeping the mouth free from harmful bacteria. But it is not bacteria alone which cause the teeth to decay; the trouble is produced by the sticky starches, sweets and other food residue which is allowed to remain between the fissures of the teeth after meals, most especially during the long period from supper to breakfast. Certain of these bacteria, due to the heat and moisture of the mouth, cause rapid putrefaction of these food remnants forming acids which are injurious to the enamel. In other words, the initial cause of dental caries is the action of the bacteria in the mouth on the sugars and starches, reducing them to lactic acid. The lactic acid not only affects certain elements which make up the enamel but it precipitates from the saliva upon the teeth the mucin (a glutinous fluid secreted from the mucous membranes), thus forming a glue-like substance (called a plaque) which acts as a protection for the micro-organisms and the fermenting carbohydrates. When this plaque is allowed to remain on the teeth for long periods, the enamel either breaks, becomes moth eaten or so impaired as to allow the

entrance of bacteria to the softer parts of the teeth. After the enamel is pierced and pits appear, unless checked, the destruction of the tooth is rapid. Now this brings us back to the statement—that a clean tooth does not decay and if the teeth are to be saved it must be during the growing period, particularly during school life. How is this to be done?

Simply by instilling early into the minds of the children the absolute necessity of oral cleanliness, in order that the habit may become a part of their daily lives. So begin early. See that the children's teeth are properly brushed each day, after meals and most especially at bed time. Merely rubbing the brush back and forth across the front teeth, as is the habit with some children, does not constitute cleansing them. The brush must be rubbed over the inner, outer and biting surface of all the teeth. A good method is to clean the molars first, then the front teeth, using a gentle circular motion, not forgetting the back of the teeth.

A small tooth-brush of medium hardness should be employed for children and the dentifrice should be something very simple, preferably a liquid. After use, the tooth-brush should be carefully washed and placed in a solution of fifty per cent. alcohol or in a weak solution of formalin (1-20) in a long, closed tube. For if left open in a glass or on a shelf, there are gathered into the crevices of the wet bristles, bacteria from the air, and these are introduced into the

mouth the next time the teeth are brushed. So while teaching the child the care of the teeth, teach him also the care of the brush.

Habits of personal hygiene are easily fixed in youth. There is no habit more important than the care of the teeth, for a clean mouth with sound teeth is the one most important factor in the prevention of disease.

CHAPTER XXIV

THE CARE OF CHILDREN'S FEET

MOST of the distressing foot troubles which bother people to-day could have been prevented by giving the feet attention in childhood. The care of a child's feet should in fact begin as soon as he has learned to walk. Most children, indeed, especially those who are heavy, need moderate restraint rather than encouragement in their efforts at standing and walking. For at this age not only are the bones pliable, but the muscles and ligaments are at first lacking in strength. This strength is gained by use, but such use should come about gradually.

In the hygiene of the feet there are two essentials: First, correct posture; second, correct dress. The bony skeleton supports the body weight and the feet are the base of that framework, so they support all the superstructure. And as each bone in the skeleton joins another bone, producing a joint held together by muscles and ligaments the feet as the basis of it all have an important bearing on the general poise and posture of the body.

As the muscles and ligaments maintain the body balance, any abnormal deviation of the feet in weight

bearing may result not only in weak foot or flatfoot, but may seriously impair the health because of lack of body balance. In children this may lead to drop shoulder, spinal deformities, backache, headache and nervousness. It is often a cause of backwardness at school, the "all-tired-out" feeling and loss of appetite.

This brings us to the question: What is the correct position of the feet in walking or standing? The normal position of the feet in bearing the weight of the body is with the toes pointing straight forward. In this position one can step squarely upon the foot, the weight of the body is equally distributed, the feet have their greatest elasticity and the arches can perform their full function without strain. The "straight foot" is the ideal. It is deviations from this that usually start the child on the road to some foot distortion in adult life.

"I have watched carefully," says an orthopedist, "and so far have never come across a patient suffering from flatfoot who habitually stood and walked with the feet nearly parallel." By experiment every mother should convince herself that the "straight foot" is, in weight bearing, the position of strength, and so aim to have her children walk and stand correctly.

For experiment, after removing the shoes stand with the toes turned outward at an angle of about forty-five degrees. What do we then observe?

FIRST, the weight is inclined toward the inner side of the sole of the foot; that is, it comes to the inner

side of the center of balance. SECOND, the heel is tilted inward, the arch downward, and the heel does not come within the axis of the leg. THIRD, the ankle bone and that portion of the foot immediately beneath it tend to bulge. FOURTH the rotation of the leg, which takes place when the feet are turned outward, puts a strain on its muscles which can be felt distinctly at the knee.

Now consider these points. What do we find? Simply, that any one of them, when exaggerated (as in time is the case) leads to trouble. Taken collectively, they result in the formation of a vicious circle, to the detriment of the whole body.

Now stand with the feet parallel. What do we note? FIRST, the entire foot is brought into use. SECOND, the body weight is distributed throughout the foot without undue pressure on any one point. THIRD, the ankles return to their normal curve and the bones lose their tendency to protrude. FOURTH, while standing with the feet parallel there are no muscles on strain and, without conscious effort, one cannot assume the position of "weak foot." These points make it plain that nature intended that we should walk with our feet parallel, toes pointing forward.

While making the experiment, stand also with the feet in the position of "pigeon toe"—that is, with the toes "turned in." What do we notice? FIRST, the arch of the foot assumes a higher curve. SECOND, most of the weight is thrown to the outer side of the

foot. THIRD, the muscles of the legs are put on strain.

Just as bad as "toeing out," one may say. But this is a mistake. While the "pigeon toe" position in weight bearing is not a graceful one, and while the natural balance of the body is unquestionably disturbed, it does not weaken the structures of the foot or lead to "weak foot." The reason for this is in the construction of the foot, the inner side of the arch which crosses the foot being less strongly supported by muscles and ligaments than the outer side.

We have seen from the experiments that the whole of foot training is to have the foot in weight bearing rest squarely on the ground. The next question is: How are we to prevent abnormal deviations of the feet?

Given a normal foot, this prevention is accomplished by correcting wrong habits of muscular action in the posture of the feet while the muscular system is immature. Begin by correcting at once any tendency to develop the wrong position of the feet. If the child tends toward the outflared position, have him practice walking a straight line; offer a prize for walking with the feet parallel, toes pointing forward. Above all, do not weary in the training. For, compared with the benefits to health from normal weight bearing, the trouble is a small matter.

While home training can accomplish wonders, there are some abnormalities which without mechanical appliance no amount of home training can change. There

are clubfoot, knock-knee, hammertoe, and so on. Sometimes the extreme "pigeon-toe" position requires special work on the child's shoes, such as pigeon-toe tips on the outer side, which tend to cause the child to toe straight.

These are problems for the orthopedic physician, not for the shoe salesman or the chiropodist. Do not make this mistake. For all too often it means not only loss of time and money, but, what is more serious, allowing the time for cure to pass. All such abnormalities should be attended to before the bones have become hardened and the muscular system too mature. It is after the sixth year that the child begins to attain the adult type of foot.

Shoes have a great deal to do with the posture of the rest of the body as well as of the feet themselves. When a child first begins to wear shoes, the fundamental consideration is that ample room be given for the free play of all the muscles. For if the muscles are bound up and weakened by strangulation, it stands to reason that the arch, which is supported by the muscles, must suffer. For this reason it is a mistake to restrict the muscles at the ankle by a stiff high shoe in which are incorporated either stiff counters or whalebone. The moccasin is the ideal shoe with which to begin.

When selecting shoes for young children, they should be carefully inspected, for in the formative period the feet are easily pressed out of shape. What are the

principal errors against which we should guard? First, be sure the shoes are broad enough across the toes and that they are sufficiently long. In the normal, unspoiled foot—that is, one which has not been cramped—the toes stand apart and the great toe is on a straight line with the inner side of the foot. What happens when the shoe is too narrow?

The small toes being the weaker are crushed together until their natural symmetry is lost. This causes discomfort and in trying to lessen this the weight is consciously or unconsciously thrown to the inner side, causing pressure on the great toe, the first two bones of which are forced inward. As a result of this the normal straight line of the great toe is gradually obliterated; we find it curved inward, pressing against the second toe. This condition lays the foundation for a bunion. For in its beginning a bunion is not an overgrowth of bone, but a partial dislocation at the joint.

The shoe which is too short causes corns on top of the toes. When the toes are pushed backward the ends curl under. This naturally pushes the other part of the toe upward and undue pressure at this point causes a corn.

Inspection of the worn shoes is a valuable guide to the condition of a child's feet. What are some significant signs? If the upper of the shoe is distorted—that is, if the median line leans toward the inner side or if the heel and sole are worn down on the inner side

—this is an indication of “weak foot.” A shoe badly worn on the outer side of the sole shows a tendency to weak ankle. This would be an indication for a broad heel and extension sole. The shoes should be low so as to allow the muscles plenty of room for development.

If the great toe has forced a cavity or an opening into the toe of the shoe, it is too short. If the toe of the shoe is unusually worn, while the other parts are hardly affected, it generally means a shortened heel cord or a weakness of the muscles of the foot, permitting what is known as “toe drop.” A shortened heel cord prevents the heel from coming down properly. It can be recognized by putting the heel cord on stretch. In other words, the heel cord is short when the foot can only be flexed upward to a right angle, with the knees straight. These are slight abnormalities which can be easily corrected when brought to the attention of a physician.

Old shoes, which have lost their shape and are run down at the heel, are particularly bad for the feet. They fail to give support and allow the body weight to fall excessively to one or the other side. Improper stockings are also a common evil. When of a hard unyielding texture or when too tight, they compress the toes and interfere with the circulation. A stocking too short is particularly pernicious, as this causes the toes to curl under. For ordinary purposes it is

well to have the stockings half a size too large. Never mind the wrinkles; normal swelling of the active feet will smooth these out.

A frequent change of both shoes and stockings is particularly beneficial to the feet. Teach the child to use the towel vigorously and to dry thoroughly the skin between the toes, as dampness here and excessive perspiration cause soft corns.

Children who in early life have suffered from malnutrition and rickets are especially prone to weakness of the muscles of the feet. It is also not uncommon among children who have grown very rapidly, the muscular development not keeping pace with the body growth. Infectious diseases seem also to be a predisposing cause of weak and flabby muscles. These children need to be encouraged toward natural exercises which, in common with the development of other muscles, tend to strengthen the foot muscles.

Running, jumping rope and all kinds of dancing, especially gymnasium dancing, bring the foot muscles into play and are especially adapted to their development. These children also need some exercises especially adapted toward strengthening the muscles concerned with the maintenance of proper foot function. There are for this purpose some standardized exercises, most of which are modifications of those recommended by the United States Army Medical Department.

Exercise #1: With the feet exactly parallel and forming the two sides of a square, slowly raise one's self up on the toes, slowly returning to the heels. Also walk back and forth across the floor with the heel lifted, the weight of the body resting on the toes and balls of the feet.

This exercise brings into play the leg muscles and also strengthens the cross arch.

Exercise #2: Walk about the room with the feet turned on the outer borders, and while standing with the feet six inches apart raise the inner side of the foot and throw the weight on the outer side.

This exercise stretches and brings into action the contracted muscles on the outer side of the foot and relieves the strain on the overstretched muscles and ligaments supporting the inner arch.

Exercise #3: While seated with the leg supported on another chair with the foot over the edge of the chair, flex and extend the foot, that is, bend it upwards and downwards as far as possible. Then while in this position, turn the foot so that the sole faces far inward.

This stretches the anterior leg and foot muscles and exercises the muscles on the inner side of the foot.

In practising these exercises commence with five minutes and then gradually increase to fifteen or twenty minutes. They should be repeated twice daily and should be carried on for at least two months.

One of the very best exercises for strengthening the

muscles supporting the long arch (the main arch of the foot) requires assistance in carrying it out: While sitting, hold the foot turned in as far as possible, while someone sitting opposite tries to resist the strength of the foot by turning it out. This is done by having the assistant grasp the heel in the palm of the left hand, and the top of the foot near the toes with the right hand, turning the foot out while the child tries to hold it turned in.

In bad cases of "weak" or "flat" foot it may be necessary to have the inner border of the heels raised, and while the weak muscles are getting stronger, special shoes may be required. Such cases should always for proper treatment be in the hands of an orthopaedic surgeon.

CHAPTER XXV

MALNUTRITION AND THE CHILD

THROUGH physical examinations of large groups of children of school and pre-school age within the past few years it has been shown that virtually one child out of every three is undernourished.

Proportionate to his size, the growing child requires more food than does an individual who has reached maturity. For, in addition to the food necessary to sustain life, the demands of growth must be supplied. This being true, if the intake of food is not sufficient we are soon face to face with that monster, malnutrition. These are the dangers of malnutrition:

First. The child's resistance is lowered. This is of paramount importance, for in disease of any nature one's resistance may be the deciding factor between life and death.

Second. The nervous system becomes unstable.

Third. Mental development may be retarded.

In other words, so far-reaching are its dangers that the child's entire life may be unfavorably influenced.

It is not alone the children of the poor who suffer from malnutrition. They may be found in equal

numbers in homes of plenty in both city and country. And why is this?

There are many factors that have a bearing on this broad question. Chief among them are:

Faulty food habits;
Physical causes;
Mental disturbances.

Incorrect food habits are legion. Chief among these are:

Excessive milk drinking;
Aversions to certain foods and allowing the child to select his own diet;
Fast eating and improper chewing;
Too much candy and sweets;
Irregular eating and taking too much food at one time;
Inadequate breakfast and the tea and coffee habit.

If kept on an exclusive milk diet after one year, or if after the eighteenth month milk is still the chief article of diet, children will invariably be found poorly nourished; they are pale, cross and irritable; the abdomen is usually prominent and the muscles are flabby. After the first year the diet should be gradually increased, since milk alone does not furnish the necessary materials for growth. If a child has the milk habit—that is, if all other food is refused, as sometimes happens—milk should be entirely cut off until a taste for other food has been acquired.

When a child begins to eat solid food, one of the

most important points in training is to teach him a taste for the things that are essential to his development; for it is in the early years that food habits are formed. Occasionally an idiosyncrasy to certain foods may be encountered; for example, some people are poisoned by strawberries, others by eggs; but as a rule most of the food aversions of childhood can be overcome by suggestion. Very often it is only necessary to tell a child that certain foods will help him to accomplish feats he has admired in others. A child should never be allowed to select his own diet, consequently eating too much of one thing and refusing others necessary for his health and growth.

Eating too rapidly and without due regard to sufficient chewing leads to the development of a vicious circle, reacting on the body in different ways. There is indigestion and constipation. These lead to non-assimilation of the food eaten and loss of appetite, which can only result in malnutrition.

The habit of fast eating is often formed by allowing the child to keep his mind on his play while eating. Eager to get back to this, he literally bolts his food. He "eats and runs"; and if allowed to do so he will frequently leave the table before taking anything like a normal amount of food. Eating and drinking at the same time helps to form the habit of insufficient chewing.

Children should be allowed plenty of time for meals; they should be taught to eat slowly and to chew their

food thoroughly. Liquids should not be allowed while eating, unless the child's mouth is empty. Fast eating soon becomes a habit, and once formed it is hard to overcome.

Candies and sweets, when eaten promiscuously, particularly before meals, lend themselves toward malnutrition by destroying the appetite for other and more nutritious food.

Irregular eating, or allowing a child to gorge himself at one meal, upsets digestion and spoils the appetite for the next. Meals should be given at a definite time each day, and from this rule there should be no deviation.

In many homes children are allowed to rush off to school without eating an adequate breakfast. Often they indulge freely in tea or coffee, which leaves them no appetite for other food. It is among these children that some of the most extreme cases of malnutrition are found.

It is during the early years that food habits are formed. Since a sufficient intake of food is the foundation of good health, the importance of painstaking care in this direction can not be overemphasized.

Among the physical causes that are a factor in malnutrition are:

Adenoids, enlarged and diseased tonsils, and bad teeth; eye-strain; lack of sufficient fresh air and exercise; excessive fatigue.

Adenoids mechanically obstruct the respiration,

cause mouth-breathing, and are often the origin of inflammatory processes in the nose and throat. Diseased tonsils and decayed teeth are not only culture-beds for all grades of acute or chronic infection, but they throw out poisons that impair the child's assimilation of food.

Eye-strain is a factor, since it produces headache, nervousness and fatigue. These naturally affect the appetite.

As a means of producing loss of appetite, close confinement indoors, with lack of fresh air, has no equal. Every child who has reached the run-about age should spend at least five hours daily in the open air. During very inclement weather in Winter the child should be given an indoor airing. For this, dress him as for the daily outing. Then open all the windows on one side of the room, closing all doors to prevent air currents.

An over-fatigued child is actually "too tired to eat." Since fatigue impairs digestion, the small appetite at this time is often nature's effort to prevent indigestion. If this extends over a long period, it means the expending of more energy than is being created, and the result is impaired nutrition.

The overactive child should be induced to rest for a half-hour before lunch and before the evening meal. The rest should be taken in bed, with the clothing loosened and windows open.

Unhappiness and worry have a bearing on malnu-

trition, not alone in causing loss of appetite, but in interfering with the absorption and assimilation of food. Chief among the causes for mental depressions in childhood are :

Too much discipline, too much school work, or worry over school standing.

The next question is, when should a child be considered malnourished?

There are various degrees of malnutrition, but generally speaking any child habitually seven per cent. underweight is not well. To say he is sick would come nearer the truth. A child even five per cent. underweight needs extra care and watchfulness, for five per cent. underweight at seven years may mean ten per cent. or more at twelve years.

Some of the physical and mental signs of malnutrition are :

Paleness with lines under the eye, flabby muscles, prominent abdomen, stooping posture, round shoulders or projecting shoulder-blades, forgetfulness, restlessness, inattentiveness, and irritability. The most infallible test is underweight for height.

In addition to plenty of good, wholesome food, and the removal of physical or mental causes, malnourished children require fresh air and rest. They should sleep in well-ventilated rooms, go to bed regularly at an early hour (in order to secure at least ten hours' sleep), and have a rest period morning and evening. Their play should not be too hard or school work too

taxing. Since competition with well and strong children either in work or play means a drain on their reserve strength, it should be avoided as much as possible; for, instead of drawing on their reserve, these children need to store up energy.

We are giving below a table of "Average Heights and Weights."

AVERAGE HEIGHTS AND WEIGHTS

<i>Age</i>	BOYS		GIRLS	
	<i>Height</i> <i>In.</i>	<i>Weight</i> <i>Lbs.</i>	<i>Height</i> <i>In.</i>	<i>Weight</i> <i>Lbs.</i>
Birth	20.6	7.55	20.5	7.16
3rd month		11.75		11.5
6th month	26½	18	25⅞	16¾
7th month	27¼	19⅛	26½	17¾
8th month	27⅝	19¾	27	18¼
9th month	28⅛	20¾	27⅝	19⅛
10th month	28½	20⅞	27⅞	19½
11th month	29	21¾	28¾	20⅛
12th month	29¾	21⅞	28⅞	20¾
13th month	29⅞	22⅞	29¾	21
14th month	30¼	23	29½	21⅝
15th month	30¾	23⅝	30⅛	21⅞
16th month	31⅛	24⅛	30½	22⅝
17th month	31¾	24½	30¾	22⅞
18th month	31¾	24⅝	31⅛	23¾
19th month	32¼	25½	31½	23¾

AVERAGE HEIGHTS AND WEIGHTS

<i>Age</i>	BOYS		GIRLS	
	<i>Height</i> <i>In.</i>	<i>Weight</i> <i>Lbs.</i>	<i>Height</i> <i>In.</i>	<i>Weight</i> <i>sqT</i>
20th month	32 $\frac{5}{8}$	25 $\frac{3}{4}$	32	24 $\frac{1}{8}$
21st month	32 $\frac{7}{8}$	25 $\frac{3}{4}$	32 $\frac{1}{4}$	24 $\frac{3}{4}$
22nd month	33 $\frac{1}{4}$	26 $\frac{7}{8}$	32 $\frac{5}{8}$	25 $\frac{1}{4}$
23rd month	33 $\frac{5}{8}$	27	32 $\frac{7}{8}$	25 $\frac{5}{8}$
24th month	33 $\frac{3}{4}$	27 $\frac{1}{8}$	33 $\frac{3}{8}$	26 $\frac{3}{8}$
25th month	34	27 $\frac{7}{8}$	33 $\frac{3}{4}$	26 $\frac{7}{8}$
26th month	34 $\frac{1}{8}$	28 $\frac{1}{4}$	33 $\frac{7}{8}$	27 $\frac{1}{4}$
27th month	34 $\frac{3}{4}$	29	33 $\frac{7}{8}$	27 $\frac{1}{4}$
28th month	35 $\frac{1}{8}$	29 $\frac{1}{8}$	34 $\frac{5}{8}$	27 $\frac{3}{4}$
29th month	35 $\frac{3}{8}$	29 $\frac{1}{4}$	34 $\frac{3}{4}$	27 $\frac{3}{4}$
30th month	35 $\frac{3}{8}$	29 $\frac{1}{2}$	34 $\frac{7}{8}$	28 $\frac{1}{4}$
31st month	35 $\frac{1}{2}$	30 $\frac{1}{2}$	35 $\frac{1}{8}$	28 $\frac{3}{4}$
32nd month	36	30 $\frac{5}{8}$	35 $\frac{3}{8}$	29
33rd month	36 $\frac{1}{8}$	30 $\frac{5}{8}$	35 $\frac{5}{8}$	29 $\frac{1}{8}$
34th month	36 $\frac{1}{2}$	31 $\frac{1}{8}$	36 $\frac{1}{2}$	30 $\frac{1}{8}$
35th month	36 $\frac{3}{4}$	31 $\frac{7}{8}$	36 $\frac{1}{2}$	30 $\frac{1}{4}$
36th month	37 $\frac{1}{8}$	32 $\frac{1}{4}$	36 $\frac{3}{4}$	30 $\frac{1}{2}$
37th month	37 $\frac{3}{8}$	32 $\frac{1}{4}$	36 $\frac{3}{4}$	30 $\frac{3}{4}$
38th month	37 $\frac{1}{2}$	32 $\frac{3}{8}$	37	31
39th month	37 $\frac{7}{8}$	33 $\frac{1}{8}$	37 $\frac{1}{4}$	31 $\frac{5}{8}$
40th month	38 $\frac{1}{2}$	33 $\frac{1}{2}$	37 $\frac{1}{2}$	32
41st month	38 $\frac{5}{8}$	33 $\frac{5}{8}$	37 $\frac{3}{4}$	32 $\frac{1}{4}$
42nd month	38 $\frac{5}{8}$	33 $\frac{3}{4}$	38	32 $\frac{1}{2}$
43rd month	38 $\frac{3}{4}$	33 $\frac{3}{4}$	38 $\frac{1}{4}$	32 $\frac{3}{4}$

44th month	38 $\frac{7}{8}$	34 $\frac{1}{4}$	38 $\frac{1}{2}$	33
45th month	39	34 $\frac{1}{2}$	38 $\frac{1}{2}$	33 $\frac{1}{4}$
46th month	39	34 $\frac{3}{4}$	38 $\frac{3}{4}$	33 $\frac{1}{2}$
47th month	39 $\frac{1}{4}$	35 $\frac{3}{4}$	38 $\frac{7}{8}$	33 $\frac{1}{2}$
48th month	39 $\frac{1}{2}$	35 $\frac{7}{8}$	39	33 $\frac{3}{4}$

Note.—The figures for height and weight at birth and weight at three months are from Charles Gilmore Kerley (*Short Talks With Young Mothers*, pages nine and eleven).

The figures for height and weight from 6 to 48 months are from the Anthropometric Table compiled for The American Medical Association by F. S. Crum and are based on the measurements of 10,423 normal babies (5,602 boys and 4,821 girls) examined at Baby Health Conferences in 31 states and possibly represent measurements slightly above the average, especially in weight.

In comparing these figures with average figures for height and weight for the 6th, 12th, 18th and 24th month, (Charles Gilmore Kerley, *Short Talks With Young Mothers*, pages nine and eleven,) we find a variation of from one to two pounds in the weights and from one half to one and a half inches in the heights.

The Average Heights and Weights for Children under two years of age, are also higher than those given by the Child Welfare Hygiene Section, Canadian Public Health Association. A variation of from one to two pounds in the weights and from one half to one and a half inches in the heights, from the averages given in the table above, should therefore not be considered abnormal for children under two years of age.

CHAPTER XXVI

THE CHILD'S EYES

SOMEWHERE I have seen a picture representing an old man asleep in his chair, while before him stood all the implements of his work. Death hovering near touched him on the shoulder. And in his hand Death carried a child ready to take on the old man's work.

The children are the hope of the future. It is the children of today who will make the community of tomorrow. And in order that they may be prepared, as soon as they must, to take our places, it is of great importance that children should grow up without handicaps.

To a great extent success and safety in life depend upon good eyesight. And in these days, when the demands of civilization have increased the perilous conditions under which the eyes are used, their hygiene is particularly important. Not only is there much defect of vision undoubtedly due to preventable causes but the great number of young people suffering from eye strain proves there is still need for popular education on the ordinary care of the eyes.

New-born infants are very sensitive to bright lights either natural or artificial. They should not be sub-

jected to a strong light for two or three weeks. A young child should never be allowed to face the sun, as this will cause the habit of squinting and may be productive of serious defects of vision. Nurse-maids who take young children out into the open should be thoroughly instructed on this subject.

In the bedroom and nursery neutral and dark tints should be used, but never white. If a white parasol is used over a carriage, it should be lined with a color, preferably green.

During such infectious diseases as scarlet fever, whooping-cough, and particularly measles, the eyes should be carefully protected. For the first few days have the room moderately dark, as at this time the eyes are abnormally sensitive to light. Hot compresses of boric-acid solution (see page 37, "Maternal Nursing") will relieve pain. During the convalescent period, avoid strain by use and keep the child on a low diet.

A young child should not be allowed to look at anything requiring, for a considerable period, close vision, since the so-called fusion of the vision develops very slowly. In fact systematic work is safe only after the ocular tissues have passed the formative stage of development. And why is this?

Because, normally, a young child is farsighted and although the accommodation is active enough, it is not so easily employed as to enable the child to obtain clear images for very long. In other words, fatigue

of the eye muscle soon takes place. And if unduly stimulated the muscular strain tends to distort the eyeball causing pressure upon the cornea.

The formative stage of development is not fully acquired until the child is eight or ten years old. And if before this time the eyes are used for close application it is apt to cause some impairment of vision.

One of the most fruitful evil results of eye strain in childhood is nearsightedness. This usually begins in childhood and goes on increasing according to the strain. Statistics show that only one or two per cent. of children are nearsighted at birth. The great prevalence of this defect is largely due to the demands of civilization. Among savage races nearsightedness is unknown, because from childhood these people use the eyes passively, that is, they focus mostly upon distant objects. In other words, looking upon distant objects requires no muscular effort. But in accommodating the eye to near objects the adjustment is brought about by muscular efforts, and is more or less fatiguing even to adults.

When school age is reached, care should be exercised to see that a child just beginning to study does not abuse his eyes. Some of the earliest principles to teach a child just beginning to use books are:

First. Never to sit facing the light but let the light come behind or over the left shoulder.

Second. To avoid books or paper printed indistinctly or in small type.

Third. Never to read in the twilight; in a reclining position or with the sun shining directly on the book.

Fourth. When reading, to hold the book from twelve to fourteen inches from the face and to hold the head up.

The habit of holding the book too close to the eyes is easily formed. This will cause a strain of the muscles both within and on the outside of the eye-ball and is a cause for nearsightedness.

In any close application of the eyes, teach the child the necessity for frequently resting them by looking away from the material or book and letting the eyes rest on distant objects. There is nothing so restful to the eye as the foreground of Nature. It is not only painted in colors least apt to tire the eyes but in viewing it there is an unconscious relaxation of the eye muscles. For this reason alone (and there are many others) the child attending school should never after school hours be deprived of his hours of play in the open.

Many children are greatly retarded in their school work by some defect of vision. To such an extent does this often incapacitate, they become discouraged. Such children are usually considered stupid and lazy, while the real trouble is that since they cannot acquire an education easily and naturally, they give up the struggle.

In an effort to see more distinctly, children some-

times bend the body forward or tilt the head at various angles. They should without delay be taken to a good oculist. For many spinal curvatures are thought to be of ocular origin. And how may these be brought about?

The child in studying or writing continually assumes an abnormal position. That is, the head and body is turned to one side. This is brought about either through an axis of astigmatism, that compels head tilting, or because of dominance of one eye.

There are many children who need glasses at an early age. Even normal vision does not preclude eye strain. A medical writer on this subject has said: "Eye strain is the more easily overlooked because it often accompanies perfect vision and paradoxical as it may seem is more likely to follow small errors than large ones. The one who has a very large error strains for clear vision, but after a time ceases because it is of no avail and is contented with limited vision, while the one with small error often continues straining because it enables him to see distinctly." And what is the real significance of this?

Simply that the child with fairly normal eyes—using them to excess—is often the one who suffers from subsequent eye diseases, rather than the child with especially defective eyesight.

It is by no means unusual for eye strain to cause reflex disturbances in distant parts of the body, the general health thereby being much disturbed. During

the early school age, should there be unusual restlessness, headaches, irritability or gastro-intestinal disturbances, the eyes as a possible cause should not be overlooked. And wherever a child is found to have constant headaches during and after school work, that child is by its efforts at study surely harming the eyes.

The farsighted child suffers from headaches in his efforts to see near objects. In fact such a child can bear close work less easily than the one with the defective vision which accompanies nearsightedness. And unless relieved by glasses not only will the child's health become impaired but he is very apt to become careless and shiftless in school work.

While the nearsighted child does not usually suffer from headaches, he will be unable to see black-boards or other distant objects used in teaching. And there is a tendency, unless something is done to protect them, for nearsighted eyes to become worse, so without proper care seriously impaired vision may be the result.

Numerous school statistics have proven in a marked degree, not only that the percentage increases from year to year, but the nearsightedness becomes progressively greater, as the child advances from the lower to the upper grades.

There is a common belief that squint eye so prevalent among young children, is caused by the infectious diseases, such as scarlet fever or measles. This idea is erroneous. Squint eye is usually caused by

farsightedness, often combined with astigmatism. The squint develops usually between the ages of one and five. It is brought about in most cases through use of the eyes without glasses, which correct the farsightedness, for close observation.

If a cross-eye should appear in a young child, he should be put into the hands of a competent physician, who will at once refract it. This should not be neglected, as it is a question of preserving the sight in an eye that otherwise may become practically useless.

Even if there is no evidence of eye trouble, when a child becomes of school age, it is well to have his eyes examined. This is a precautionary measure of great value, as it discovers the degree of the child's vision and disease or errors that might exist.

Pink eye is a common infection among school children. It is marked by redness of the eyes, a mucopurulent discharge and a feeling as if grains of sand were sticking under the lid. This is highly contagious. The child should be kept from school and as long as there is any inflammation present, should not use the eyes. Any article coming in contact with the child's eyes should be strictly isolated to prevent spreading the infection to other members of the family. Pink eye usually lasts from ten days to two weeks and terminates favorably. In its initial stage apply cold compresses and call in a physician.

CHAPTER XXVII

OPHTHALMIA NEONATORUM

I WENT to a hospital today to distribute some presents to little children—presents selected by one who knew personally every little child and knowing had selected what she thought would bring to each the most happiness. Before I had finished distributing the packages, a little hand tugged at my arm and I heard: "Read it! Read it!" I turned to find Roger. He held before me a book, repeating again: "Read it to me!" I stopped, hesitated and wondered, for I remembered that the little present which I had handed Roger was a ball and a small tennis racket and not this book such as had been given the other boys of his age. I knew also that the ball and racket carried with it not only more real thought than anything else but real heart throbs, for Miss Harris loved Roger better than any of the other children.

I was awakened from this little reverie by the touch of a little arm clasp around my waist and the words—"My eyes are bad, read it to me," as he held the book before me.

Those words, "my eyes are bad," told a sad story. Roger was nine years old. He had never been to

school. While not entirely blind he would never know the joy of anything like normal eyesight, for tiny scars partly covered those beautiful brown eyes. No one ever noticed those scars and Roger did not know of their presence, but they kept him from seeing well enough to study and he could not compete with the other children and now had come that insatiable thirst for knowledge of the bright, active child. And with this sad realization, perhaps for the first time, that he was different, quite different from the other children. What was it that had caused those scars over Roger's eyes?

When a tiny baby he had that form of inflammation of the eyes called "Ophthalmia Neonatorum." This is an inflammation responsible for about ten per cent. of the blind in the United States and for about ten to twelve per cent. of all the inmates of blind asylums. It is caused by germs getting into the eyes during or after birth. These germs cause redness, swelling, and a discharge. If these symptoms are allowed to go on without treatment, an ulcer is likely to form and a scar is the result. It is these scars which obstruct the vision.

So here was little Roger paying the price because the mother who loved him so dearly, did not know what might follow neglect of a baby's eyes. But she knows now—now that it is too late. One day when I met her at the hospital, I asked a few questions. It was the same sad story I had heard so often before.

He was born with perfect eyes, she was sure. "Oh, yes!" she said "beautiful brown eyes!" But soon the lids became red and swollen and there was a discharge from beneath them. She thought it was simply cold in the eyes and would get well of its own accord.

Today our hearts are filled with sympathy for men blinded in battle. What about the large number—more than three hundred thousand—who have not that great compensation of having sacrificed their sight for a glorious cause? What about the little children hopelessly handicapped because they were unable to defend themselves and either through ignorance or carelessness, those who were responsible neglected to safeguard their most precious birthright—their eyesight.

The care of a baby's eyes should begin even before they have seen the light of day. Immediately after the head is born and before the delivery of the body, the eyes should be carefully wiped free from mucus or blood with a small piece of clean absorbent cotton or soft old household linen sterilized by boiling and dipped in boiled water or a solution of boric acid, just before using. Use a separate piece for each eye and discard as soon as it has been used once. The stroke should be from the nose outward and made with the greatest gentleness, without opening the lid. As soon as possible after the birth of the body the eyelids should again be wiped free from mucus, the eyelids

gently opened and two drops of a one per cent. solution of Silver Nitrate dropped into each eye. The Silver Nitrate treatment of the eyes of the newborn, called Crede treatment (first used by a doctor of that name) if universally used would almost eliminate Ophthalmia Neonatorum and its dreadful consequences. This solution should be furnished by the doctor and should be put into the baby's eyes by the doctor or nurse—*never* by the mother or a friend. This precautionary measure is necessary because the baby's eyes may have become infected during the passage of the head through the birth canal. Of such immense value is this preventive measure considered in safeguarding eyesight, many states have enacted a law compelling physicians and all who minister to women in child-birth to use it. Mothers should by all means insist upon its use.

Should your baby's eyes become red and swollen and there is any sign of a yellow discharge, lose no time in placing him in the hands of a competent physician. Your baby's eyesight may be saved by a few hours care of this kind while neglect may cause life-long blindness or at least seriously impaired vision.

There is an unfortunate belief that all sore eyes are caused by the germ of the social disease called "Gonorrhea." While gonococcus does cause numerous eye infections, the eyes are also made sore by numerous other germs and diseases of innocent origin. The sore eyes of your child are not a disgrace but blind-

ness or seriously impaired vision is—for it shows utter neglect.

In any case of eye inflammation, the greatest care must be taken not to infect one eye from the other. Always use different pieces of cotton or gauze for each eye and never pass the same swab twice over the eye, take a new piece each time.

Be very sure that anything used for the baby does not come in contact with anyone else, since most eye inflammations are highly infectious and other members of the household may become infected. All swabs or sponges should be placed on paper after using and burned at once. And as infection may also be carried by the fingers, the hand after coming in contact with the eyes should be scrubbed with a brush under running water, especially should this be done if the eye contains pus.

In bathing the face of a baby use a clean piece of linen and fresh water; never use the same cloth with which the rest of the body has been cleansed. Care should be exercised not to allow any soapy water to enter the baby's eyes in bathing. Carelessness along these lines often causes severe inflammation of the eyes. Each time the baby is given a bath, the eyes should be gently swabbed out (starting from the nose outward) by dipping a clean piece of gauze in a saturated solution of boric acid, always using a separate piece for each eye.

CHAPTER XXVIII

FEARS OF CHILDHOOD

ALLEN was four years old, so for a long, long time it had been his custom after being "tucked in" by mother to sleep quietly throughout the night. So when one night he appeared in the family circle, arrayed in his night clothes and complaining of a pain in his foot there was no reason to doubt the sincerity of his statement. After applying some simple measure his mother went with him to his bedroom and sat by his bed until he went to sleep, which he did promptly. But when this same thing happened the next night and the next, Allen's mother began to wonder what it meant, especially as the pain was not always in the same place and he never complained of it during the day no matter how hard he played. So after this had happened a number of times, his mother, when tucking him in one night, said: "If you have the pain tonight you are not to leave your bed, rub it yourself just as mother does." Hardly an hour passed before Allen was heard crying in bed. When his mother went to him to inquire the cause, she was a little surprised to hear him say:

"Stay here with me, there are lions in the house,

they will eat me." Then it was she understood why he had feigned the pain. He had been much impressed with the roaring of the lions at the menagerie which he had been visiting daily and although it had not seemed to terrify him at the time, here was a beginning fear.

"And what did you do?" I asked as Allen's mother told me this little story.

"I at first embraced him, thus giving him a feeling of security, and then we talked of something else. When he was ready for it, or in other words after the feeling of protection had been established, we talked of the big lions and how they could never get out, therefore, there were none in the house and so there was nothing to fear." "In the end," she went on to say, "we laughed about the roaring of the lions. Then, he turned over to go to sleep and to think, as I suggested, of his little bunnies in their bed fast asleep."

This was all a very simple substitution, but this mother was applying mental prophylaxis and had nipped in the bud the formation of a fear, which if injudiciously handled might have become a serious fear psychosis.

It is not every mother who recognizes the symptoms of a growing fear (for it is not always an easy task) and very few realize the danger of allowing a fear or any other trait to become deeply rooted or abnormally developed in childhood. The fact that real dangers

along this line do exist has long been known. In fact, doctors all over the world are continually finding people who are unable to live their lives normally because of some psychopathic disorder. And what do we mean by this?

We mean that there are men and women suffering from weird obsessions, abnormal dreads, haunting fears, annoying thoughts, morbid anxieties and even disturbing bodily symptoms, not from any physical cause at all, but because of some error in mental hygiene during childhood; we mean that the seeds of many nervous disorders in adult life are sown in childhood.

Now, let us see how a fear psychosis is developed. First, we know that self-preservation is the first law of life, therefore, the fear instinct is in itself a normal one, being, as it is, deeply rooted in the impulse of self-preservation. This instinct is generally made subservient to the will by environment and education. But there are certain children who inherit an unstable nervous system; they are impressionable and over suggestible. It is these children who under certain conditions of training and environment have the fear instinct over-developed. It is then that fertile soil is formed wherein may grow various psychopathic troubles. Exciting the imagination of the young child in an unhealthy way, by ghost stories, harrowing fairy tales, or by frightening him, is one of the most potent factors in the excessive development of the fear

instinct. "Every ugly thing told to the child, every shock, every fright," says Angelo Mosso, "will remain like minute splinters in the flesh to torture him all his life long."

How do these things react on the child in an unhealthy way?

First, we must remember that a child's brain is excessively impressionable and very active, in fact the brain never works more actively than during childhood, which fact is shown in one way by a child's quick acquisition of language. Next, the imagination of a child is far more vivid than an adult's and his life is more or less made up of emotions. Lastly, his very helplessness makes him very fearful. Now something is told to him that frightens or greatly disturbs him. Does the child forget it in a short time?

Apparently he does. He may never speak of it again and if asked about it might not recall it. Yet, the incident or the shock from it has not been forgotten. It has been registered in the child's subconscious mind and may give evidence of its continual existence by some seemingly inexplicable fear or phobia later in life.

"The ineradicability of fear when inculcated early in childhood," says Dr. Tom Williams, "is illustrated by the case of a Southern lady, who even at an advanced age dared not go alone into the dark, because of the feeling of indescribable horror which it gave her, although she had long since ceased to believe in the

stories (told her by Southern darkies) which originally made her afraid to do so. She realized this so forcibly herself that she would not allow any of her children to be told alarming tales. This psychophylaxis resulted in her girls' never knowing what it meant to be afraid in the dark."

Another case was that of a young girl who at the age of sixteen had never been regularly to school on account of great nervousness. This girl could not be induced to go upstairs alone at night and was afraid to sleep alone. She dreamed a great deal and always awakened frightened, clutching her companion desperately for reassurance. Noises such as creaking floors made her think there was some one in the house, and although she knew there was not, she could not make herself believe it. Her fears were always of fires or burglars and they occurred only when she was in bed or asleep. Analysis and inquiries showed that a servant had told her and two older sisters terrifying stories, when children, but these horrors had passed away from the other two children.

Sometimes a fright in childhood is the starting point for an unusually peculiar phobia. I remember well a grown woman who had an abnormal dread of seeing or touching anything with feathers; she even feared a feather on a hat to touch her. This was found to have been caused by a swallow flying into her face. When a small child, she entered one summer evening a dark room in which there was an open fireplace.

A swallow having entered the room by way of the chimney was flying around in an effort to escape and thus the bird flew into her face. This frightened the child badly. She apparently soon forgot about it, but the shock remained in her sub-conscious memory.

These and various other phobias and mental conflicts with which children, men and women struggle, are usually characterized by those coming in contact with such a sufferer, just as a "peculiar kink" in one's make-up. That they suffer keenly and are seriously handicapped for any career is seldom appreciated.

Once these fears and phobias have been formed they can only be dispersed by the resources of a good neurologist, that is, they are entirely curable by modern psychotherapy. And how are these cures made?

First, they try to find out what was the foundation or beginning of the obsession—the root of the evil. But how?

By several methods. Sometimes by dream analysis. Sometimes by hypnotizing the subject. Having arrived at the cause, they proceed to help the subject to a realization of the situation. Sometimes they teach him to interpret the symptoms of a disorder produced by the emotions; they give him training in concentration and self-control; they give him a change of mental attitude and gradually suggest away the hidden memory image.

The teachings of modern psychology make it clear that two principles must be kept in mind by those

who have charge of young children. One is the avoidance of suggestions that stimulate fears. The other, to make it a point to develop in a child the virtues of courage and self control. And how are these virtues developed?

As the chief source of all fear is ignorance and lack of understanding, it naturally follows that when a child is afraid of something, it must be explained to him and the fear suggested away. Take, for instance, the fear of a dark room. It will not make the child less afraid by telling him: "There is nothing to be afraid of." And if in connection with this he is either scolded or laughed at, matters are made worse. You have added another fear to the one he already has—the fear of being ridiculed. Thus the child tries to conceal his feelings and to hide his fears within himself. Often this is done to the detriment of his mental and physical health.

On the other hand, suppose we explain the darkness, perhaps make a light in the room, afterwards making it dark again. Then, when we feel that he is prepared for it, we take him gently by the hand and lead him into the room, or perhaps only to the door. What is the result?

The child has had a chance to demonstrate to himself that there is nothing of which to be afraid. He is then, of course, no longer afraid.

A little girl I knew was fearfully afraid of dogs. At the first sight of one she would run and scream.

As she grew older this fear did not subside. So one day while in the home of a playmate, who had a large, unusually lovable dog, her mother sought to demonstrate that the dog would not hurt her. First, she petted the dog and while stroking his extended paw, called to the little girl, saying: "I believe he is a Prince inside just like the Beast in *Beauty and the Beast*. You know you were talking about him only a short time ago." Finally, she persuaded her to come forward and stroke his paw. This the child did with some reluctance at first and while standing as far away as her little arm could reach. But she gradually grew to love the dog and her fears in this direction disappeared.

Self control is easily taught in infancy and childhood, but to be learned after the age of puberty, requires powerful motives and determination. If parents would pay more attention to the development of this quality in childhood and would aid children as far as possible to go on their way undeterred by fears, frights or ugly thoughts, little would be heard of the functional nervous and mental disorders, now so prevalent.

CHAPTER XXIX

FACTORS INFLUENCING THE NERVOUS HEALTH OF CHILDREN

MORE and more is there a growing consciousness among those who have to do with adult maladjustments that these as well as many of the nervous maladies and much physical inferiority are largely due to the mistakes of childhood—to faulty habits, mental and otherwise, acquired usually in early life, as a result of wrongful education, a poor environment or example.

The constitution which one inherits and the influences to which the body, especially the nervous system, are exposed during life and particularly during childhood, are the two great factors which determine whether or not one will become nervous. While heredity is an unquestionable factor, environment is probably more responsible for the neurotic tendencies in childhood. And without doubt much so often attributed to inheritance is the result of the influences of environment. There is, in fact, one period during life in which heredity and environment may be said to overlap. This period is during early childhood.

The most important feature of a child's environ-

ment is his training and education. And the period most often neglected is that which comes prior to the school age. For the so-called fixed habits are the ones stamped early upon the child. They are formed during the physical and mental development in the first years of life. "Give me the first seven years of a child's life and I care not who has the rest" is a saying attributed to the Jesuits.

Nervousness is a characteristic malady of childhood. Its first treatment is preventive. And now what are some of the factors that may influence the nervous health of children?

First, we may mention imperfect nutrition in early childhood. This may lead to so great an impoverishment of the tissues and to such checking of the natural development that in later life one may never be able to stem the torrent of its ill effects. While it is, of course, important that a diet of the right chemical composition should be given, it is equally necessary to develop in the child good habits of adapting itself to a well regulated régime. And what do we mean by good habits of adaptation?

We mean that no opportunity should be given the child of imposing its will—to get "notions" or to "fuss" over details. So frequently the mistake is made of allowing the child's fancy to influence the diet. Good, simple foods in suitable amounts should be provided, and the child, largely independent of choice, trained to eat them. Bad eating habits cause

irritability, anæmia and malnutrition. They lead in later life to many breakdowns. Childhood is the time to overcome tendencies in this direction. For if correction is neglected until after the age of puberty, there is small hope of improvement. It has long ago been remarked by medical men, familiar with the evils both mental and physical, directly traceable to this—one of life's worst pit-falls—that the child who is not allowed to cultivate food aversions but who learns to eat and digest all wholesome foods, makes the very best start in life. For all too often the little food antipathies of childhood, if fostered, develop into a scrupulous apprehension concerning the effects of various foods. This, so often in adult life, leads to some morbid anxiety regarding the health.

As correct habits with regard to food are aiding in the development of sound personality, the same principle applies to other bodily functions. Thus proper hours of sleep, fresh air, bathing and exercise, all have, as prophylactic measures against nervousness, an important place.

Faulty habits in regard to sleep, are perhaps as frequent as those pertaining to food. Many children, owing to faulty training, do not get sufficient sleep. They so dominate that unless the parent goes to bed at an early hour they will refuse to sleep. To such an extent do these children contrive to assert their own will, the parent is taught to accede to their demands. Many a pale and nervous child owes this condition

entirely to lack of sufficient sleep, due to the fact that the mother, unable to resist the appeal of the moment, has not insisted upon a healthy régime and sound sleep habits have not been established. It should be remembered that habit is an important factor in sleep. From the beginning, the child should become accustomed to being put down while awake and should go to sleep of his own accord. The habit of regularity should be formed not only as to a regular bedtime hour but also in the taking of "naps." The older children grow, the less they like going early to bed and "bickering" about bedtime is sometimes allowed to become a family habit, all too often the child learning that Mother does not mean what she says. The habit of going to bed at regular times formed during the first years of life can be made to hold as long as the mother insists it shall be done. Up to seven years of age, the rule to bed at six should be enforced, and the bad habit of sitting by the child while he goes to sleep should never be begun.

The importance of harmonious muscular development as promoted by out-door exercise, for the welfare of the nervous system of the growing child, has been recognized by both physicians and laymen, since the old Greek times. Correct postural attitudes, good respiratory and articulatory habits, also have a conspicuous place in educational methods against nervousness. This is true not only because of their esthetic value but because they tend also to give other qualities,

namely—greater self-respect, self-control and self-reliance.

Children should very early learn the lesson of self-control. If by crying or by a display of temper, the child learns that the desired thing is to be obtained, he will have made a very bad start. "How often has an indulgent mother given a child something it has asked for in order to stop its crying and to avoid a scene!" writes Doctor Lewellys Barker, adding: "It is hard to imagine anything, in the circumstances, worse for the child. If, instead, the mother had ignored the temper and told the child that it must say 'please' and must wait a few moments after its temper had been controlled and the request has been made before the desire will be gratified, it would have been quickly possible to convince the child that it can get things by controlling itself rather than by emotional explosions. The substitution of self-mastery for emotional outbreaks is easy when begun early but very difficult, indeed, well nigh impossible, if begun late in life." Very often emotional outbreaks in young children are considered just naughty habits which will be outgrown. But will they? No! One does not just grow into self-control. Neither can it be taught by reproof or reprimand. It must be practised in acts. It is just these naughty habits continuing in one form or another, which in adult life so often take the form of "nerves."

An important cause for nervousness is the tendency

of some mothers to over-protection and over-anxiety. They are constantly shielding the child from the rough places of life and there is an undue solicitude as to his welfare, the slightest symptom causing the greatest alarm. The child is thus endowed with an abnormally sensitive and impressionable nervous system. Later on, when in the nature of things the principle of protection must yield to the principle of effort, the sensitive nervous system suffers keenly.

Some children are particularly impressionable and over-suggestible, and under certain conditions of training and environment the fear instinct is over-developed. This is, in fact, one of the earliest influences which later contributes its share to a neurasthenic predisposition. The teachings of modern psychology particularly direct attention to two principles which should be borne in mind by those who have charge of young children. One is the avoidance of suggestions that stimulate fears. The other to make it a point to develop the virtues of courage and self-reliance.

The craving of the child for sympathy and dawdling are mental attitudes that bear watching. To yield too much to the craving for sympathy is most unkind. This is sometimes induced by excessive petting when tired or after an injury. When tired the child should be put to bed and after an injury his attention should be diverted. On the other hand, the denial of sympathy to the extent of suppressing his natural sympathy is equally bad. While an undue or unhealthy

sympathy should be avoided, the natural peculiarities of the child should not be forgotten.

The dawdling tendency is often shown by idling unduly over meals. The child should be taught to eat his meals within a reasonable length of time. If he persists in lingering, take the food away and let him go without. If not hungry he will be all the better for going without, and if he is, the added hunger will prevent repetition of the fault which is one of the first steps toward the formation of a bad habit.

A tendency to sulkiness, or cherishing ill-will, should be viewed as symptoms seriously to be studied and combatted. For if not curbed, habits may be formed which will prepare fertile soil for the later development of mental states very harmful to the nervous system. So admirably has Doctor William H. Burnham covered this in one of the seven conditions of healthful mental activity in "Mental Health for Normal Children" we cannot do better than quote a few significant sentences: "Children should be taught to live one day at a time, to settle their moral accounts every night, never to hold a grudge, never to let the sun go down upon their wrath, to look upon each morning as a new day in which to improve, but not to carry over their troubles from yesterday. It should be remembered that cheerfulness and kindness are contagious and, unfortunately, so are moroseness and ill-will. If those who surround the child tend to con-

tinually disparage and censure those about whom they talk, they may often quite unconsciously sow the seeds of enmity and ill-will in young minds."

The child inclined to be diffident and unsocial, who reads too much or who plays with others too little, and who makes few friends, may develop what is called a "shut-in" personality. These children are apt to become suspicious or to have ideas of inferiority or superiority. It is better for a child's mental health to eat, play, work and study with other children, than alone or even exclusively with adults. Free play either as follower or leader is a powerful antidote in overcoming the "shut-in" type of personality. In other words, children should be encouraged to be social animals.

As a factor making for health of the nervous system, the joy of work should not be overlooked. It is the instinctive tendency of the child to accomplish something. This is shown by the fact that he will quickly imitate acts of his elders. The satisfaction of having performed constructive work in a successful manner is not confined to mature men and women, but may come very early in the lives of children.

The difference between play and work should be clearly understood by the child and the greater dignity of the latter impressed upon his mind at an early age. Education and occupation are the best kind of builders of a healthy nervous system.

Some of the physical causes for nervousness in children are :

Adenoids, decayed teeth, indigestion and anæmia, which provoke inadequate action of the nervous system.

The country offers the most favorable condition for the health and education of a child predisposed to nervousness. It is there amid "the glory of raw materials" that the human plant thrives best. For as Browning expresses it:—

"It was better youth
Should strive, through acts uncouth,
Toward making, than repose on aught found made."

CHAPTER XXX

THE ACTIVITY OF A CHILD AND WHY IT SHOULD NOT BE REPRESSED

"CHILDREN should be seen and not heard" was a frequently quoted maxim of our grandmothers.

In the progress and growth of a little child nothing is more remarkable than his activity. Unfortunately, thoughtless and cruel efforts are often made to repress it.

A child has a gradual awakening to the discovery of himself and his surroundings. His first aimless reachings for things are earnest efforts. After he has learned to walk, he enters upon a constant and vigorous course of activity interrupted only by periods of sleep. This desire for activity is no less fundamental than his desire for food. It should not be needlessly repressed. Forbidden or dangerous articles should not be left within reach, to be snatched away just as he is beginning to imitate their use, as he has observed it in older people. The important point is to give the child a sense of freedom while guarding his safety.

The strongest of all the promptings of Nature is the impulse of the child to play. And this ardent desire for play and amusement is implanted for a

purpose, it serves an end. Now why is this such a universal and deep-seated propensity?

Because in normal development each power of mind and body insists upon constant exercise. In other words the first law of growth and physical development is exercise. In the economy of Nature, it is this purpose which is served by the restlessness and activity of the child. To satisfy this motor activity is a study in itself.

But, does not this instinctive love of play in the child serve other purposes?

Yes, others that are vastly important! In fact, the full purport of this scheme of Nature is often overlooked by those who surround the child.

No mother would knowingly cause a child to be dull mentally. Yet, there is no doubt that many children are retarded mentally, to a greater or less degree, by unwise restrictions of their early life.

What are some of the requirements of the intellect which are promoted by play?

First, there is that most important acquisition of education—the habit of thought. The capacity of thought emerges very slowly. Very few people ever attain the full development of their intellectual powers. Education to a great extent consists in awakening these slumbering powers. Childhood's happy hours of play induce the habit of thought. Then there is concentration and attention. In no other way are these qualities developed so well as by games. It is

also through this medium that the child attains quickness of his intellectual powers and develops rapidity.

So much for the intellectual side of this question, but has it not another very important function?

Yes! The development of brightness and vivacity. The desire for play adds to the prosaic and commonplace the gladsome tints which are born of the imagination. Crush this desire in the child and you not only make him prematurely old but he will be sluggish and feeble in thought. Youth is really the apprenticeship to life with play as the master workman. Well has it been said: "He who has been taught cannot be untaught unless he come as a little child."

The sports of childhood leave a lasting impression on the emotional side of one's nature. What an asset is vivacity and responsiveness! Who can estimate the value of a cheerful spirit or of a ready sympathy? Play cultivates the habit of gladness and appreciation; it sparkles into the child's nature those graces that make the world kin and kind; it cultivates a joy in companionship and intellectual fellowship. Do not attempt to crush it but cultivate it. Nature intends this early impulse to quicken the sensibilities and stimulate the lighter emotions; it intends that it shall infuse gladness, vivacity and sparkle into the activities of the mind as long as one lives.

If a child is denied this rightful activity in sports and play; if premature sedateness and quiet are enforced upon him, he will lose the buoyancy and cheer-

fulness which should be his intellectual and moral tonic all his days. Suppress or extinguish this desire and you dwarf or distort valuable intellectual and emotional power. When we find one endowed with vivacity and charm, we are inclined to consider it a gift. There is no doubt it depends largely upon early environment when a child. For "if you would have life and beauty in the daily thought of the man, they must be put into his daily life when he is a child."

The periods of play in a child are unmistakably marked. He will turn from one amusement to another as his years advance. However, free and unrestrained control defeats its own end, if certain limits of time are exceeded. In other words, after a certain time, amusements should occupy a secondary place; they should not interfere unduly with the education or the vocation which has been undertaken.

CHAPTER XXXI

THE CHILD'S SPEECH

As we write there is with us a mental picture of a little girl of eight whose beautiful brown eyes filled with tears as her mother said in a voice none too kind: "Katherine, I have told you repeatedly that if you would take time to talk you would not make such a failure of it." It was then the mother imitated the child's stammering, in order, as she thought, to show her the ugly sounds. As the little girl turned, crushed and hurt, her mother said: "The distressing part of it is, she seems to get worse rather than better." And as we consider this mother's methods small wonder that her child's speech defect grew worse.

All defects are not the same. Sometimes there are deformed dental arches or teeth not in normal alignment, or perhaps some part of the speech mechanism is absent, as is the case when there is a cleft palate. Imperfections caused by defective mechanism, however, are easily recognized. The remedy for such disturbances is either surgical or mechanical interference. But persons having speech defects of this nature are few in comparison with the large number who stutter and stammer.

Children do not stammer as soon as they begin to

talk. We must remember that a child is never born with this defect. While the speech mechanism is present at birth, speech is a faculty gradually and unconsciously developed. Stammering usually begins about the third or fourth year, and, unless some counter influence is brought to bear, is inclined to grow much worse through the school period.

Stammering may be caused by fear of difficult sounds when speaking, or by nervous shock; it may be caused by imitation, or by mental contagion when the child is in constant contact with some one who stutters, or most often by improper speech training. A child tries to imitate speech as he hears it around him. If the words are spoken slowly and distinctly, the child will try to talk in this way. On the other hand, if he constantly hears very rapid speech, he will try to speak fast and then he may stumble.

There may be other causes for a child's stammering. The brain centers for the production of speech often do not keep pace with the centers where the mental images of words are formed. In other words, the child thinks faster than he can speak.

The practise of making a child read or use words much too difficult to articulate, pronounce or understand may tend to make him stammer.

And if the child is oversensitive, or if through ridicule or scolding, corrections are made destructive rather than constructive, the habit may not only be continued but is frequently also driven in deeper.

Do not wait for the child to outgrow the habit. The golden opportunity for the correction of this speech defect is when it first appears.

The attitude of the parents is most important, however. The stammering child is a nervous child. It requires more than the normal effort for him to talk. This is naturally a greater drain upon his vitality. In addition to a well-selected diet and all kinds of outdoor exercises, the child who stammers should have more hours of rest than are ordinarily allotted.

Everything tending to produce psychic disturbances, such as anxiety, fear or intimidation, should be avoided. And never should the clothing be so tight as to compress the respiratory or neck muscles.

The child should not be made to feel that he is in any way different from other children. Do not call his attention to the fact that he speaks imperfectly. And does this mean he must not be corrected?

Not at all. But let your corrections be constructive. Gently check the child. But do not tell him what not to do. Show him how to speak correctly. Lead him gradually into a more confident, more deliberate and careful mode of speaking. *Never speak harshly.* To do so makes the child conscious of his trouble; it impresses the difficulty more deeply into his mind and adds to his fear. These in turn may lead to loss of attention and interest and often to backwardness.

Teach the child to think first of what he wishes to say, and then, when his thoughts are formed, to ex-

press them deliberately. In this way he will avoid the lack of coordination between thought and speech.

If, when speaking, the child feels embarrassment, endeavor by means of affection and cheerful intercourse (devoid of compulsion) to supplant the fear of stumbling with confidence in his ability to speak freely.

Always endeavor to prevent such a child from rushing into speech when he is excited. If he wishes to tell of an exciting happening, gently check him. This interruption may not necessarily take the form of a correction, but it must be effective enough to cause the child to stop and recover his normal poise; it must be made in a manner suggesting to the child calm and deliberate speech. Such an interruption may be something like this: "John, mother never understands when one speaks to her hurriedly."

When there is a speech defect or even a tendency toward one, the mother should take time each day to go over carefully with the child all the vowel sounds. These, as given by the Director of Speech Improvement, Department of Education, city of New York, are "Ah," "A," "Ee," "Aw," "Oh," "Oo" (the "a" used is that in the word *make*). The exercises should be practised standing.

"Ah" should be produced with mouth open wide, the tongue flattened, with its tip against the lower teeth. Practise words: Father, papa, car, barn, star, Arthur, and so forth.

“A” must be made as a pure tone without a diphthongal combination, as ayee. The tip of the tongue should touch the lower teeth, but the remainder of the tongue should be slightly arched above their level. Practise words: Ate, ache, blame, fate, make, baby, and so forth.

“Ee.” Care should be taken that the upper and lower teeth do not meet and that the sound be made not too thinly. The tongue is held in a position similar to that for producing “A.” Practise words: See, meet, need, feel, eel, free, and so forth.

“Aw.” The lips are extended, with the mouth well opened, the tongue slightly convex. Practise words: Raw, saw, jaw, awning, lawn, gnaw, yawn, and so forth.

“Oh.” This is made with the lips round and pursed slightly forward. Avoid breaking the “oh” as though it were “o” plus “oh.” The tongue is held flat (except for the back, which is very slightly raised), with the tip against the lower teeth. Practise words: Though, dough, and so forth. The same sound is found in words without the “oh,” such as old, home, potato, and so forth.

“Oo.” The lips are rounded and pursed forward. The tongue is held in a position similar to that for producing “oh.” Practise words: Ooze, spoon, too, and so forth.

If the child has trouble in articulating these, the mother should have him observe the position of her

articulating organs as they act in producing the sounds. After the vowels then practise some exercises containing letters and words with which there has been special difficulty.

"Irrespective of the primal cause," says Dr. Frederick Martin, "it will be found that ninety per cent. of our cases have not their vocal organs fixed in the correct position for producing the sound which they are attempting to make. A boy may try to say 'mother' with his mouth wide open; an impossible position for the letter 'm,' which requires that the lips be pressed together.

"Therefore make him produce this sound correctly and, by breaking up the word into its component parts, or phonograms, see that he coordinates his vocal organs so as to give each sound in its proper sequence. In the beginning the process is slow and conscious, but very soon fear of speech itself is dispelled, confidence restored, and a new subconscious control of the organs instituted—all of which makes for perfect speech."

There are also some tongue gymnastics that should be practised. These are: 1. Pointing tongue outward and upward to nose; 2. Pointing tongue outward and downward; 3. Rotating around lips, beginning at right and going up; 4. Rotating, beginning at left and going up; 5. Raising tip of tongue; 6. Curling tip of tongue under; 7. Lalling—raising tongue to palate; 8. Expanding and relaxing the soft palate.

Tongue gymnastics are necessary in order to develop a faster coordination of the lingual muscles and a quicker response to stimuli, just as exercises to develop the muscles of the body are often necessary.

Nursery rimes and poetry read aloud by the child are of value in helping to overcome a speech defect, but he should not be taught to a beat or in an unusual intonation of voice. It is also a mistake to attempt to correct stammering by conscious control of the breath, since the disturbance is not caused by a lack of breath. This is proved by the fact that stammerers, invariably, can sing without difficulty and singing requires greater lung power than speaking.

Sometimes a child will use one letter for another as "t" for "c" or "k" for "g." This is usually either because he has not acquired the use of the muscles at the back of the tongue which cause these sounds to vibrate or when speaking he presses the tip of the tongue upon the gums of the upper incisors. If the child seems unusually slow in developing these sounds, hold down the tip of the tongue with a teaspoon and ask him to repeat the sounds he has been unable to produce. This effort will, after a short time, show surprising results in overcoming the difficulty.

And now to summarize, what do we gather?

First. That a child's speech habits are formed long before he is able to take thought for himself. And that defective speech is often the result of careless habits acquired unconsciously in childhood.

Second. The speech mechanism is so delicate that it quickly registers the state of the nerves. This is shown by the fact that while speech is the last center developed in the evolution of the brain, it is the first faculty lost when we suffer shock in any form.

Third. That the correction of a speech defect (barring defective mechanism and paralysis which frequently follows diphtheria, meningitis and infantile paralysis) is largely a matter of getting new habits adopted.

Fourth. The way to rout out some undesirable element or force is to put some counter influence to work. Thus if haste in speech should be the child's weak point, gradually instil the opposite force—deliberation.

The avoidance and elimination of speech conflicts and defects are not only an economic asset but also a physical and mental asset. It means that the speech center is the keystone or binding link of other areas of the brain and with its development we help in the proper training of other associated areas, such as hearing, memory, color and form.

Stammering and stuttering in practically every case are curable if corrective measures are applied in childhood. But if left until adult life there are few afflictions more difficult with which to deal. In fact, by this time it has become such a fixed habit, has so deranged the nerve mechanism, and the element of fear has become so pronounced, that the whole character often has to be reconstructed and the whole inner life reorganized.

CHAPTER XXXII

POSTURE—THE FOUNDATION OF A CHILD'S HEALTH

IF we were asked to name one physical fault from which most perils to health arise, that one would be—wrong posture. That this is responsible for many and various evils is no longer doubted. In fact, its results are so far-reaching, to tell just where it will end or the amount of damage it will eventually do is impossible.

And now what do we mean by wrong posture?

We mean a downward displacement or depression of the various body parts. It is found in the drooping of the head, shoulders, ribs, in various types of spinal curvature and frequently there is a downward drooping with bulging at the lower waist line, of the abdomen. Any of these give the body the appearance of sagging downward, evidencing a condition which is not only the result of low vitality but which in turn tends to cause low vitality, thus creating a vicious circle. And now let us see just how this vicious circle is established.

First. If the body is not properly poised with the chest raised (giving sufficient space for the res-

piratory movement) the lungs cannot be properly developed, thus breathing is imperfect.

Second. Unless the position of the body is such that not only adequate space exists, but proper muscular support is given, the abdominal organs cannot work rightly.

Third. The pelvic organs cannot function normally unless the position of the body is such that the abdominal organs are held in the abdomen and not crowded downward into the pelvis or upon the pelvic organs or their blood vessels.

And what does all this mean?

Simply that the more normal one's posture the more harmonious is the coordination of the body parts. That is, there is an equalized expenditure of force in respiration, in circulation, in digestion, hence in the rhythmic action throughout the body organism. To just what extent bad posture causes poor vitality is not definitely known. It is certain, however, that by assuming a good carriage, raising the chest and head, one feels better and vigor seems to be longer maintained. It is generally recognized by physicians today that large varieties of disabilities, disorders and some diseases can be not only prevented, but by education and re-education in conscious control, they are often cured.

Faulty posture is one of the most common defects. Instead of bad attitudes being the noticeable exception, the straight, easy carriage with balanced muscles is

conspicuous because of its infrequency. To be assured of this, stand some day on a busy street corner and observe the passing crowd. Even the non-critical observer may note many defects. The faulty types most often seen are:—

The slump posture—head thrust forward, shoulders rounded, hips forward, knees slightly bent, and in all probability walking with a decided toeing out, which position causes a weakening of the structures of the foot.

The second common type is practically the opposite of the slump. The individual stands with the knees straight, the anterior lumbar curve greatly exaggerated, shoulders drawn up with the neck shortened. This type is most often seen in heavy individuals who, as a rule, have a large pendulous abdomen.

It is in early youth, while the habits are in process of formation, that the most constructive work can be done toward training in physical grace and strength, which in all its beauty is only possible when the proper postures in standing, sitting and walking are maintained. During this period it is comparatively easy to prevent and correct faulty attitudes. During this period, by muscle education, in other words, by exercising the right muscles, flat foot, narrow chest, round and stoop shoulders, one hip higher than the other and most cases of spinal curvature (those in which organic changes are not present) can be prevented. In fact, practically all deformity acquired in childhood with the

exception of that brought on by paralysis and tuberculosis is due to someone's neglect. For by early and appropriate treatment most congenital deformities may be prevented from becoming fixed and developing into a severe grade.

And now how shall we begin to build for good posture?

First, we must bear in mind that the body is kept erect by bones, muscles and ligaments. And as it is the muscles which keep the bones and ligaments in position, they must, in order to hold the body part up properly, be strong and in good tone. Muscular tone is dependent not only upon the use of the muscles, that is, bringing them actively into play, but upon the power of the nervous system which presides over their nutrition. For this reason, environment, good food and fresh air are primary essentials to good posture. In addition to these, as soon as the intelligence of the growing child will permit, he should be trained how to use his feet, how to breathe properly and should be shown what constitutes good posture.

The feet, since they are the base of the bony skeleton which supports the body weight, have an important bearing on the general poise and posture of the body. The correct position of the feet in standing and walking is with the toes pointing straight forward. That is, if a line were dropped from the knee joint it ought to fall over the second toe. This position not only allows the weight of the body to be equally distributed,

but the feet have their greatest elasticity and the arches can perform their full function without strain. Efforts should be made to correct, while the muscular system is immature, any abnormal deviation from the straight foot in weight bearing. To do this (when one is dealing with a normal foot) is not difficult. It is simply a question of correcting wrong habits of muscular action. Sometimes it is only necessary to have the child practise walking a straight line with the feet parallel, toes pointing straight forward. Many children are prone to weakness of the muscles of the feet. This is true especially of those who in early life have suffered with malnutrition and rickets. The infectious diseases are also in many instances a predisposing factor, while frequently, among children who grow very rapidly, it is due to the fact that their muscular development has not kept pace with the body growth. These children, in addition to the natural exercises which in common with the development of other muscles tend to develop the foot muscles, should be encouraged in all kinds of dancing, especially gymnasium dancing. This, since it brings into play all the foot muscles, is especially applicable to their development. Children with weak and flabby foot muscles also need some exercises especially adapted toward strengthening the muscles concerned with the maintenance of proper foot function. These exercises we have fully described in the chapter "The Care of Children's Feet" page 194.

Said a physician to a little boy who had been brought to his clinic: "Johnny, how do you breathe, through your nose or through your mouth?"

"I don't breathe nowhere," was Johnny's answer, which as a matter of fact was almost true considering his very large tonsils and adenoids. This is true of many children, thus an important consideration is to be sure there is no obstruction to free breathing. Even after the removal of obstructions most children need to be taught how to breathe. Doctor S. Adolphus Knopf, the specialist on tuberculosis, is particularly keen for instructing every child in the art of how to breathe. When practising deep breathing, the correct standing position must be assumed. The correct position is:—

Feet slightly apart, toes pointing straight ahead, weight equally distributed between the feet. The hips should be straight, stomach drawn in (not evidencing effort) but showing the result of correct hip and chest posture. The chest should be held high with the chin lifted but not tilted. The shoulders should be dropped downwards, not forced back, as they will be back if the chest is high. Contrast this erect, natural and easy position with the poise of a child whose head is dropped forward, breast bone depressed, chest flattened, the neck muscles strained in the effort of trying to hold up the chest, a position which must, according to the law of gravity, unbalance and strain other parts of the body.

After assuming the correct position, before an open window or out of doors, tell the child to fill the lungs (to inhale) and to try before expiration to make a slow mental count of five, exhaling sometimes explosively and sometimes slowly and steadily. If this is done regularly for a few minutes each day, little by little, the lungs will dilate, one will unconsciously increase the length of the inspirations and the slowness with which the air is expelled until gradually the count may be increased to ten or fifteen. And in time the desire for deep breathing will be constant. In other words, it will become a fixed habit.

To be constantly reminding a child to hold up his shoulders, to stand or sit straight, will not accomplish the desired result. After being reminded he will straighten up, most often in an unnatural position, but will instantly drop back into the old position as soon as his attention has been directed elsewhere. The child must be shown what constitutes correct carriage and must know how it feels to stand and sit in good posture. Often this can be accomplished as early as the 5th year. And as soon as the child can be made to understand, correct posture should be insisted upon at all times. Efforts to assume and maintain good position should not, however, be made irksome to the child. Give him the information in a lively interesting way, emphasizing such points as "head up," "chest high," "straight back," "straight hips," "lift

the waist up," "stretch the body upward" (stand tall). All of these elevation cues make for increased action of those muscles which hold the body erect. Playing soldier is an interesting way to impress the habit of good posture upon a little boy. He must, however, be impressed with the necessity of keeping the attitude of the soldier throughout. When the child seems unable to assume a good position, that is, if the abdomen is poked outward or he does not "stand tall" these defects may, by placing him against the wall and pressing the hand over the abdomen in and upward and (while keeping the shoulders and hips against the wall) stretching the arms downward, be overcome.

While holding the body straight and its parts adjusted and high, the actual strength of the muscles, (within reasonable limits), is important. Special exercises for the purpose of developing the muscles should always be considered as distinctly secondary in importance to the conscious continued efforts to assume the right carriage. Well ordered play is the most natural way for a child to obtain physical exercise. Children should, however, be discouraged from indulging in one game to the exclusion of all others, as this will tend to develop only one set of muscles causing improper proportions.

When such exercises as skating, dancing, lawn tennis, horse-back riding, running, rowing, wrestling, swimming and throwing a ball have failed, then one should

resort to other methods in an effort to train up various groups of muscles. For this purpose the simple setting up drills are beneficial.

Deep breathing, while standing in correct position in the open air, is particularly to be encouraged. If when going out on a cold day there is a chilly sensation, tell the child to take seven very deep breaths, which will send a glow all over the body.

In giving exercises to children one should always remember to begin with the easier ones, going on to the harder only after the simpler ones have been thoroughly mastered. The child should be very carefully taught and only in accordance with his understanding and strength development. He should not be given exercises when tired and they should not be continued long enough for him to become overtired. And always it must be remembered that all exercises are useless unless the proper position is maintained while they are being done. Also, that in order to get the benefit of an exercise, it must be done faithfully until the muscle has become firm and strong, just as an athlete in practising for some special event develops the muscle strength necessary to enable him to accomplish it. Whenever it is possible, it is best to let the child have exercises properly supervised by a physical director.

Childhood is the time for the most constructive work in correct posture—from the little one just able to get

around to those of the adolescent age. This is the period when the habits are in process of formation. This is the period to make correct posture habitual, making not only for better health in childhood but for excellent health in later life.

CHAPTER XXXIII

TUBERCULOSIS AND THE CHILD

WHEN I think of tuberculosis and the child, into my mind there comes a mental picture of many children I have known who were needlessly handicapped by lameness or physical deformity. Then I find myself wishing that all mothers could be made to understand a few facts bearing on tuberculosis in childhood. For these few facts would not only save many from contracting tuberculosis, but would greatly reduce physical deformities among those who do.

And what are these facts?

First. Young children are easily infected with the tubercle bacillus.

Second. Measles and whooping cough in early life are often followed by tuberculosis.

Third. The germ causing tuberculosis is just as much at home in the bones as in lung tissue.

Fourth. A fall or moderate injury is often a means of promoting tuberculosis of a bone or joint.

Fifth. That in tuberculosis of a bone lameness and deformity are prevented by early recognition.

The germ of tuberculosis is a tiny, millet-shaped bacillus which cannot be seen until magnified three

hundred times under the microscope and stained red. It is not hereditary. That is, it is practically never handed down from parent to child. But the child is much more easily infected with the germ than the adult. And why?

Because the blood of a child is not equipped with the same fighting power. The average grown person has considerable resisting power. It takes repeated and prolonged exposure; it takes unfavorable conditions of working and living to infect him. But this is not true in childhood. The chief sources of infection in childhood are:—

First. From tuberculous parents or relatives kissing and fondling the child.

Second. Playing around on the floor of infected rooms and eating from dishes used by tuberculous people.

Third. Through milk from tuberculous cows.

Children should be kept out of sick-rooms, especially should they be kept away from those who cough. The germ may be conveyed by kissing, coughing or sneezing in the child's face, or by using for him an infected handkerchief.

Tubercular germs are sooner or later killed by the sunlight, but in the dust and dirt of infected rooms not reached by the sunlight, they remain alive and active for a long time. For this reason young children should not be allowed to play around on the floor. Whenever possible, a carpet sweeper should be used

in place of a broom. If the broom is used, the floor should be strewn with damp sawdust, wet paper, or something similar. The dust cloth should always be dampened. The dishes used by a tubercular person in the home should always be boiled.

Cows frequently have tuberculosis and sometimes germs in large quantities get into the milk. Children are often infected from this source. Raw milk should not be given unless one is sure that the cow which supplied it is non-tuberculous. Milk from an unknown source should be pasturized.

It has long since been shown that among all the diseases of childhood, measles and whooping-cough take precedence in the evolution of a predisposition for tuberculosis. Now what is the real significance of this?

Simply, that the old theory that measles and whooping-cough are trivial diseases and children might just as well have them, is a fallacy. Every effort should be made to prevent babies and young children from acquiring either of these. At best they have a debilitating effect, but the older and stronger the child, the greater the possibility of coming through unscathed. If contracted, however, not only should the child be carefully watched during the disease but especial diligence exercised until his nutrition has become as good as before the infection.

In adult life the lung is the most vulnerable point of attack for the tubercle bacillus. This is not true

of childhood. In early life the primary seat of tuberculosis is in the bones, joints and glands, the lungs becoming subsequently affected. Of all affections of the joints, tuberculosis is the most common. It is most prevalent from the second to the tenth year.

Considerable explanation is necessary when saying tuberculosis of a joint is promoted by a fall or moderate injury. When a child is delicate, the tubercle bacilli are frequently present in the body but resistance has been such as to prevent them from gaining in any part a foothold. But when there is an injury, the blood is invited to the end of the bone where growth takes place. And if in the body there are tubercular germs they are carried to the part by the blood. Finding the bruised tissues and bones just the media necessary for their growth, it is there they colonize and begin to multiply. For this condition a mild injury is more favorable than a severe one. And why?

Because with a severe injury, such as a fracture, even if the germs obtain access to the part, they are destroyed by the activity of the reparative processes. In other words, they do not find so favorable a field for growth as in the inflammatory exudate offered by the mild injury.

All children fall once in awhile. It is something which cannot be avoided. The prevention of tumbles is not the point we wish to bring out. But if a child begins to walk lame, has a bad sitting posture, or gets up and down from the floor in an awkward, un-

natural way, as if trying to save from strain some part of the body, do not content yourself from day to day and week to week by thinking it is just a little stiffness from a tumble you know he has had. It may be a beginning tuberculosis. Seek at once the advice of a physician. It is a thousand times better to find you have been mistaken, than to have waited too long.

Tuberculosis of a bone is sometimes slow in process but none the less deadly in its destruction of the bone cells. Its slowness sometimes causes the parents not to pay much attention to the trouble until the disease has already reached its second stage—the stage of deformity.

To the doctor and nurse, when a child is presented for treatment of a tubercular joint, not unusual remarks are:—

“He has been limping for some little time. I have noticed that the knee was swollen and thought it must be due to a slight sprain, but now he is unable to bend it.” And in that most distressing condition, tuberculosis of the spine (sometimes called Potts’ Disease) where in some instances there seems to be no end to the resulting deformities, we hear:

“He has not walked naturally for some time and when I would take hold of his body under the arms to lift him, he would cry. Then I noticed this little knob on his back so felt sure something was wrong.” When the disease has gone so far as this (to the stage

of deformity) it means that the germs have gotten a strong foothold; it means many months and perhaps years of treatment. And to the eager questions:—

Will the spinal deformity increase? And will the joint remain stiff? No doctor can definitely answer. For they are questions greatly influenced by general conditions, individual differences being marked.

There are several positive signs which when taken in combination point definitely to a tubercular lesion of the bone or joint. These are:—

Limp, or soreness, loss of appetite, night cries and loss of weight.

If there is the slightest suspicion of a tubercular joint, rubbing or manipulating the joint in any way is the worst treatment one can give it. Put the child to bed and as much as possible secure absolute rest for the part. Do not rub or bend the joint or put any strain upon it from the weight of the body. At the earliest possible moment place the child in the hands of an orthopedic surgeon. By early and efficient treatment, the disease may be arrested and deformity or lameness prevented.

CHAPTER XXXIV.

NOW FOR HEALTHY HEARTS

IF asked with what disease mankind is most disastrously affected, we believe nine out of ten people would answer tuberculosis or cancer. And why are we sure of these answers?

Because for the last twenty years the medical profession and public health workers have impressed upon the public mind the importance of waging constant warfare against the White Plague, and more recently we have become better acquainted with preventive measures against the other monster—Cancer. And yet these two enemies of the human race are by no means the greatest. There is towering above these another foe and this is Chronic Disease of the Heart.

It was the cause of more deaths in New York City than resulted from tuberculosis and more than double those due to cancer. Chronic heart disease prior to 1916 had but little consideration as the subject of administrative control by Health Authorities. At this time the statistics set forth were hardly short of startling. For there loomed chronic heart disease which had claimed more than ten thousand victims. The exact

figures for 1919 as taken from the Board of Health Bulletin are:—

Organic Heart Disease	10,421
Tuberculosis	7,396
Cancer	5,141

But this was not the whole story. Physical examinations conducted by the Bureau of Child Hygiene disclosed the fact that more than twenty thousand public school children were already handicapped by permanently damaged hearts. And also there was, without doubt, a much greater number of children suffering from other diseases, which if left uncontrolled, would result in permanently damaged hearts. From this evidence it became clear that the prevalence of heart disease among school children and young people constituted a public health problem of the first magnitude. It presented in all its phases a problem both medical and social. For not only must some way be found to aid those already handicapped but there was the big question of prevention. For it was clear that a considerable portion of this disability was distinctly preventable. The importance of the question was so pressing there was incorporated an association called "The Association for the Prevention and Relief of Heart Disease." The purpose of this scientific body was:—

First. To coördinate the already available agencies for relieving those suffering from heart disease; to gather information of all kinds bearing upon the affection and to develop and apply measures which would prevent the incidence of heart disease.

Second. To seek and provide suitable occupation and to promote the establishment of special dispensary classes for patients with heart disease.

Third. To extend the opportunities for adequate care of cardiac convalescents and to urge the provision of permanent institutional care for such cardiacs as are hopelessly incapacitated for self support.

Fourth. To encourage the establishment of associations with similar objects in other cities.

All this began five years ago. The acorn has been steadily growing. The Association now has in operation thirty special cardiac clinics. They are provided with facilities and experts for the treatment of diseased tonsils, adenoids and teeth. Many of them have social service workers, thus enabling a follow-up system to be carried out in connection with cardiacs who have been discharged from hospitals. By reason of this observation and advice not a few people with damaged hearts are able to remain in good health while performing a reasonable amount of work. In some of the public schools a survey has been made and heart disease has been detected in children at an early stage, where not before suspected. Special cardiac classes on the ground floor have in some of the schools been organized. This is more or less of an experiment in order that the capabilities of these children may be determined and to find out to what extent ordinary school life is permissible. In addition, the Association has encouraged the establishment of con-

valescent homes for cardiacs, keeping in close touch with the work of such institutions as:—

The Burke Foundation, The Zinn Home for Cardiac Children, The Mineola Home for Cardiac Girls, St. John's Guild and the Pelham Home for Children. Under the stimulus of the Association the number of beds available for cardiac convalescents has increased from seventy-five to over three hundred.

And now what are the causes of so much heart trouble, especially among children?

The causes may be grouped under Infectious Diseases and Improper Methods of living. Infectious diseases such as, scarlet fever, measles, diphtheria, syphilis and particularly rheumatism, seem to offer the most immediate point of attack. In early life rheumatism of the acute inflammatory type often leaves a damaged heart. In children it is preëminently the great destroyer, in fact, may be mentioned as one of the chief causes of heart damage. Most people think of rheumatism as a disease affecting only the joints. This is a mistake. It affects nearly every organ of the body. In childhood, rheumatism attacks in particular, the heart—producing heart disease, and the nervous system—producing chorea (St. Vitus's dance). While heart disease and chorea are recognized as diseases of the greatest importance, there are few who realize how frequently they occur as a result of rheumatism. Chorea is very frequently associated with rheumatism of the heart. In other words, a child

with chorea very frequently also has heart disease.

The heart disease found among children is generally divided into two classes:

First. Organic heart disease, that is to say, permanent disease of the heart valves or muscles.

Second. The functional type. This is a type in which under the best possible conditions for improvement, the child may be expected to recover.

Unfortunately, most of the heart disease in early life caused by rheumatism persists through life. And why is this?

It is because rheumatism leaves scars. And these scars damage the delicate valvular mechanism of the heart. Then it is the tendency of rheumatism to recur. Thus it may again and again attack the heart. We have said that rheumatism was preëminently the great destroyer. The natural question would be: What is the cause of so much rheumatism?

The causes of rheumatism or how it invades the body are not definitely known. It is, however, undoubtedly a germ disease, in which the infection enters the body through various avenues, such as diseased tonsils, adenoids or decayed teeth. It is probable also that infectious material may be swallowed with the food, or it may in some way find lodgment in the intestines. However this may be, it is certain there is created somewhere in the body a focus of infection—an entrenchment of the enemy. From this point, at any time, especially when some other disease

condition has impaired the general health, the enemy may sally forth to wreck destruction. The germs from the infective process may stop in a joint or in many joints, causing arthritis; they may stop in the large muscles, resulting in muscular rheumatism or they may affect the heart lining, causing chronic disease of the heart.

"Of five hundred consecutive cases of rheumatism which came to me," says J. P. Poynton, M.D., London, "an analysis of the chief symptoms, on their first visit, showed that two hundred and forty-eight complained of painful joints and muscles, three hundred and fifty had heart disease, two hundred and forty-five had chorea, one hundred and thirty-seven tonsilitis more or less acute. Rheumatism then must not be looked upon as a disease in which a microbe has only to enter the patient like a penny slipped into a penny-in-the-slot machine, whereupon rheumatism will appear as does the box of matches. Unless the infection is virulent, and beats down all resistance, it requires a peculiar constitution and other attending circumstances before it produces this rheumatism and the process of infection is a complex one."

In childhood rheumatism must not be considered as an acute disease, at once prostrating the child with pain, swollen joints and fever. While in adults the disease often shows itself in this way, it is not true of childhood. Rheumatism may in childhood resemble in one respect tuberculosis. And this, in that the attack

may not only be acute and obvious but also very gradual and insidious.

It is clear that the greatest reduction of the incidence of heart disease will follow the prevention of the infection we call rheumatism. As to the focus of infection which gives rise to rheumatism, it is obvious that in childhood infected tonsils and decayed teeth are in a great measure responsible.

In a group of eighty-two children with heart disease, examined at the New York Post-Graduate Medical School and Hospital, fifty-seven had one or more decayed teeth and sixty-nine had badly infected tonsils. In a group of five hundred and ninety-six children examined for the Bowling Green Association, to determine the state of nutrition, there were twenty-three cardiacs or four per cent. and in the whole group only sixty-two had defective teeth and there were only forty-two with enlarged tonsils. In the cardiac group, therefore, decayed teeth are seven times and infected tonsils twelve times more frequent. Another direct effect of either defective teeth or diseased tonsils is a lowering of vitality and resistance to disease. This not only leaves the child a prey to the infectious diseases but leads to increased frequency of infection. And what is the real significance of all this?

It means that the removal of adenoids and infected tonsils and the proper care of the teeth are the most direct and effective preventive measures not only against rheumatism but against all kinds of infections.

The value of out-of-door exercise and sufficient sleep in well ventilated rooms is also a preventive measure that may not be too highly appraised.

It is particularly important, in order that its evils may be minimized, that the early symptoms of rheumatism in childhood should be recognized. And what are some of the vague warnings that may suggest its approach.

First. A sore throat with pain in the limbs.

Second. Vague pains with occasional fever, often called "growing pains."

Third. St. Vitus's dance or chorea.

Nervousness of a type which causes a child to drop everything and change in disposition may also be a warning of approaching trouble. Children with commencing heart disease are gravely injured by anything which strains the heart. Although when rheumatism attacks the heart there is no known way of preventing scars forming and damaging the valves, there is much that may be done to minimize the evil and strengthen the heart. The throat, the tonsils and the teeth require attention. Great care must also be exercised to see that these children are prepared for vocations that do not defeat the purpose of remedial treatment. This means of course, occupations that will prevent acute attacks of heart overstrain, since these not only are distressing and dangerous but often lead to permanent invalidism.

In addition to the objects which the name of the

Association implies, "Prevention and Relief," their aim is to teach during the school age those children affected with organic cardiac conditions and to guide them intelligently into the most suitable vocations. This is a big work. It promises much. For it must inevitably lead not only to a lessening of those diseases which attack the most vital organ in the body but to the prevention of invalidism and the consequent economic loss of those handicapped by damaged hearts.

CHAPTER XXXV

THE PREVENTION OF DIPHTHERIA (THE SCHICK TEST)

Twenty-seven years ago, antitoxin, a serum conferring immediate passive immunity in diphtheria, was given to the world. It was one of the most noteworthy achievements in medical science. The mortality from diphtheria was gradually reduced from about seventy-five per cent. to ten per cent. At this point, it has, however, remained more or less permanent. And what does this ten per cent. mortality mean?

It means that in New York City alone there are each year not less than fourteen hundred deaths from diphtheria, while the number developing this disease is about ten times as great—namely, fourteen thousand. It means that in the United States the calculated yearly mortality from diphtheria is from twenty to twenty-two thousand, while the total illness from this infection is from one hundred and fifty thousand to two hundred thousand cases.

When we think of impaired health and mortality from diphtheria it is to think of the children. For eighty per cent. of the deaths from this disease occur under five years of age.

The natural question at this point would be:

Why with a remedial agent conferring immediate passive immunity, as is the case with antitoxin, should this relatively high mortality from diphtheria remain more or less constant? For we know that if in every case antitoxin could be applied early enough, the mortality from this disease could be reduced to nil.

There are two causes for this, either one or both of which may be factors: They are:—

Delayed application for treatment and delayed recognition of the disease on the part of the physician. And what is the significance of this?

Simply that while the use of antitoxin has robbed diphtheria of much of its terror, this disease is still no small menace to the health and lives of the children.

Almost eight years ago, Schick—a scientist—discovered by means of a simple clinical test called the Schick Test, that certain people are quite immune to diphtheria and cannot catch it, while others are quite susceptible to the infection. It has been shown that three-fifths of all children between the ages of six months and three years are susceptible. The figures for the different ages are:—

Under three months	15%
Three to six months	30%
Six months to one year ..	60%
One to two years	60%
Two to three years	60%
Three to five years	40%
Five to ten years	30%
Ten to twenty years	20%
Over twenty years	12%

The reason some children are immune and others susceptible is probably due to an inherited tendency to make antibodies (antitoxins) which, as the child grows older, develops. In fact, the whole problem of susceptibility goes into the big question of general or acquired immunities. We know that to a remarkable extent we manufacture in our bodies immunities (antibodies) against certain diseases. While in many instances these are acquired by contracting and recovering from the disease itself, immunities are also acquired as a result of the necessity our bodies may be under of fighting off disease. That is, when our body cells are strong enough to overcome the disease cells, we become gradually inoculated against the disease.

The immunities or antitoxins which a mother develops are transmitted to her children. As a general rule the child does not retain these longer than six months. And why is this?

It is due to a change in the chemical composition of the body. While at birth the chemical composition of the baby's body is the same as the mother's, this is not true after a time. Thus the child eventually has to create its own disease-resisting antibodies.

The antitoxins conferred by the mother against diphtheria are in most instances lost after the first six or nine months. And this explains the high mortality from this disease between the ages of one and five years.

We have said that by means of a simple test, called

the Schick Test—it can be ascertained if one is susceptible to diphtheria. And what is the Schick Test?

It consists of injecting into the skin, usually at a point just below the inside of the elbow, a tiny drop of a prepared fluid. To those who are immune to diphtheria, this has no effect. If one is susceptible to the disease, however, there appears within from twenty-four to thirty-six hours, an area of redness at the point of injection which is about the size of a five cent piece. Within the next two or three days this becomes more marked and leaves for a time, on fading, a brownish area. This test is practically painless. There are no after effects, with the possible exception of a slight itching at its site, and even when positive, there is no scar formation or permanent mark. But this is not all. For having determined upon the susceptibility of a subject, it is possible to actively immunize (protect) such a one against the disease. And here one might well say: It has, since the introduction of antitoxin, been possible to protect one against diphtheria. Quite true. The administration of antitoxin to a child exposed to diphtheria protects within a few hours, but this produced immunity disappears in less than three weeks. There is, however, an immunity which lasts for years and possibly a lifetime. And how is this brought about?

By the administration of a preparation known as toxin-antitoxin. One injection of this preparation brings protection to about seventy-five per cent. of

those who have shown a positive test. The usual way of giving toxin-antitoxin is in three injections at intervals of a week. This immunity reaches its full effect in two or three months, and as we have said lasts for years and possibly for a life-time.

After the injection of toxin-antitoxin, there is usually some local and constitutional reaction. This reaction is similar to typhoid vaccine but of less severity. Children between the ages of one and ten vary according to their age in the amount of reaction, the youngest showing the least and the oldest the most. All disturbance is over, however, within from twenty-four to seventy-two hours.

After seven years of intensive study with reactions from the Schick Test, the Research Laboratory of the Health Department of the City of New York, have reached the conclusion that this is a most valuable and accurate test. They began sometime ago the task of testing the entire school population of the city, protecting those against disease whom the test showed to be susceptible.

The tests among the public school children have shown that from thirty to sixty per cent. are susceptible to diphtheria, while in some of the private schools it has been shown that as many as seventy-nine to eighty-five per cent. of the children could easily fall victims to this disease. A particularly striking fact was brought to light by the application of the Schick Test among school children, namely:

That children in schools in better localities, where there was less overcrowding, had a greater predisposition to diphtheria than those in what might be called tenement-house districts. In a private school, not crowded and where children of the well-to-do attend, it was found that seventy-two per cent. showed a positive reaction to the test for susceptibility to diphtheria, while in another similar school seventy-nine per cent. showed positive. In a rural school in New Jersey, the percentage was abnormally high, showing eighty-five per cent. And what is the significance of this?

Simply that the average city child has a greater resistance to the common infectious diseases, such as diphtheria, scarlet fever and measles, than has the country child. This may be due to either one or both of two causes:

First. They are bred of less susceptible stock by reason of having experienced and survived these diseases.

Second. The tissues of those who live in the country not coming in contact to such an extent with these diseases so common in the city do not become accustomed to producing the antibodies required to overcome them. The country child is therefore, more susceptible than the city child. And this brings us back to the big question of immunities acquired as a result of the necessity our bodies may be under of fighting off disease.

Diphtheria is the most uncertain and treacherous disease with which physicians have to deal. It may be transmitted by direct contact from the sick to the well, by drinking cups or eating utensils which have been used by the sick, by contaminated clothing, toys and books or it may be transmitted by a "carrier," that is, one in whose throat the germs may be present. A "carrier" may have had the disease and recovered from it or he may have sufficient resistance to overcome the germs himself but could easily transmit them to others who having less resistance might contract the disease. A child may develop diphtheria within twenty-four hours after exposure or the attack may be delayed for a month or six weeks. One attack does not protect against another. While there is some evidence that a degree of immunity is established, this is probably not effective after a few months have elapsed.

And now what are the advantages of the simple test which we have described?

First. It enables the physician and the parents to know whether the child is susceptible or immune to diphtheria.

Second. In case of an outbreak in the home or in the school, the unnecessary injection of antitoxin and long periods of quarantine are avoided. For by means of this test one is enabled to select the susceptible children, thus it is possible to rapidly control an outbreak of diphtheria.

Third. The immunization (protection) of all chil-

dren from diphtheria is essential in bringing up a diphtheria-immune population.

Fourth. Diphtheria is widely prevalent. The mortality among children from one to five years from this disease is almost as great as from measles and scarlet fever combined. The number of children left with crippled hearts by reason of this affection, it is difficult to estimate. For of all the acute infections, diphtheria is most prone to attack the heart muscle.

After testing more than fifty-two thousand children, the Director of the Research Laboratory, Department of Health, New York City, and his associates have reached the conclusion that the solution of the diphtheria problem depends upon a general, active immunization of all children of pre-school age, the Schick Test, in order to simplify matters, being omitted. This conclusion is due to the high proportion of positive Schick reactions in children from six months to five years of age and the corresponding high sick rate and mortality from diphtheria in this age group (80 to 85%) of all diphtheria cases.

The means is now at hand whereby diphtheria scares may become a thing of the past. Parents should seriously consider protecting their children against diphtheria. Take this question up with your physician.

CHAPTER XXXVI

POLIOMYELITIS (INFANTILE PARALYSIS)

SOMEWHAT as the Angel of Death struck the Egyptians, when (according to Moses) the first born of every household lay dead in the morning was the way "a pestilence which walketh in darkness and wasteth in noonday" desolated some communities. In the summer of 1916 sweeping through New York City, taking a death toll of more than twenty-four hundred, leaving thousands of others with a blighting deformity, Infantile Paralysis moved on into other states, laying its blighting hand upon no less than twenty-seven thousand victims, mostly children.

The Infantile Paralysis epidemic in 1916 made a profound impression upon the public for three reasons:—

First. The severe and dramatic results seen in those attacked.

Second. The policy of absolute frankness as to the limitations of scientific knowledge.

Third. The publicity given to the fact that in such epidemics the problem is almost as much social as medical, since they cannot be eliminated and prevented without public coöperation.

Few diseases are more terrible than Infantile Paralysis, which all too often leaves its victims crippled for life. And in order that children may be guarded with every precaution from its blight, it is of supreme importance that every person should know something regarding its sinister character, and, so far as is known, its methods of dissemination.

Infantile Paralysis—the name “Acute Anterior Poliomyelitis” describes it far more accurately—while recognized and described as early as 1840, did not until 1907 become a serious problem in America. At this time a pandemic of the disease arose in the United States, France and Germany. This led to redoubled efforts in the fields of research, in which were employed the more subtle channels of later bacteriological methods. While comparatively little is yet known concerning the disease, this research work, led by Doctor Simon Flexner and his associates, has established certain definite facts:—

First. The disease is due to a micro-organism so minute that it passes with great readiness and with little or no loss of energy through the pores of the densest and finest porcelain filters.

Second. The entrance of the micro-organism or so called filterable virus into the system is by way of the mucous membrane of the nose and throat.

Third. The same portal of entry can and probably does act as the pathway of exit for the germ to be transmitted by contact or carrier to new fields for reinfection.

Fourth. The virus through the blood stream reaches the spinal column, there producing lesions which cause a more or less degeneration of the sensory and motor cells.

The name "filterable virus" is applied to some disease-producing organisms, because they are so tiny as to be beyond the range of microscopic vision and pass through the pores of the densest and finest filters. While there is some doubt as to whether the virus causing Infantile Paralysis has actually been seen, there is conclusive evidence that it is a living organism, since quantities as small as one one-thousandth to one one-hundredth of a cubic centimeter of the filtrates, suffice to cause the disease in monkeys, after the usual incubation period (time elapsing between implantation of contagion and the appearance of disease) when injected into the brain.

"That the virus is a living organism must be concluded," says Doctor Flexner, "from the fact that such minute quantities of it suffice to carry infection through an indefinite series of animals," adding: "We have propagated the virus now through twenty-five generations, representing twenty-five separate series of monkeys, and as many removes from the original human material supplying it, and the activity of the virus for the monkeys has increased rather than diminished in the course and as the result of the successive transplantations. . . ."

Infantile Paralysis is most frequent during the dry summer months, from June to October, although,

cases are reported throughout the year. While pre-eminently a disease of early childhood—the greatest number of victims being between one and five years—it does not wholly spare older children or even adults.

As to the symptoms, there is no one classification that will cover all cases, since the disease occurs in many different forms and in varying degrees of severity. Its multiform character is due to the fact that the virus by affecting different parts of the nervous system causes different symptoms. In general, they are those of an acute infection. In many instances gastro-intestinal symptoms predominate. While in others, there may be stiffness of the neck, bending of the head, sweating, marked nervous irritation and general sensitiveness.

The chief terror of Infantile Paralysis lies in its appalling power to produce deformities. This is due to the impairment of the motor function of certain of the cells controlling muscular action—most often in the legs. The motor paralysis appears after the acute onset. Generally, this paralysis reaches its maximum about the second day, hardly ever later than the sixth day.

It is not generally known that there is a type of Infantile Paralysis, called the “abortive type,” which very often is not brought to the attention of a physician, thereby resulting in dissemination of the disease. This is called the “abortive type” because true Infantile Paralysis of the paralytic type does not develop.

There may be an illness resembling an acute febrile attack, lasting hardly longer than twenty-four hours before the beginning of convalescence. While many of these cases show suspicious weakness of the muscles during convalescence, happily for the child the usual paralysis does not develop and the little one is allowed to be about. While such an outcome is indeed fortunate for the child, he is none the less dangerous to those with whom he comes in contact. Striking instances of this type of the disease were encountered by doctors and nurses in the house to house inspection made in some of the crowded districts during the 1916 epidemic. Children were frequently found going around showing a slight limp. The history of each case always brought out the fact that the child had been ill. As the mother would describe it: "He has been a little sick, but not enough to stay in bed." But what did this mean?

It meant that the child in being about at a time when the weakened muscles should have been at rest, was threatened with permanent injury; it meant also that such a child was a center of contagion for other children. In sections where the disease has been in evidence, the appearance of symptoms in a young child suggestive of an acute infection is always suspicious. Particularly is this true if accompanied by sweating, nervous irritability, neck stiffness and general sensitiveness. To be on the safe side, all children having fever should be isolated pending the diagnosis.

During an epidemic of the disease, children should be kept from crowds and all public places of amusement. They should not be allowed to go to parties, picnics or other places where they will freely mix with other children, some of whom may already be infected or may be carriers of the virus. This cannot be too forcibly emphasized. Well do we remember a tragic incident of 1916. A little girl—an only child—living in a town in New York State, where some cases of poliomyelitis had been reported, was being taken by automobile to the country. While passing through a town in another state, the mother decided the child needed some additional clothing, so ventured with her into a department store. This little girl within the usual time after exposure developed poliomyelitis and is today a pathetic cripple. While no one can say absolutely that the child, while in the crowded store, was exposed to the virus of Infantile Paralysis, it was a grave risk to take.

Especial care should also, during an epidemic, be given food, particularly such food as is consumed uncooked. This should not only be carefully selected but should be well cleansed with pure cold water. Food should be carefully protected at all times against contamination from dust, flies or other insects.

Measures tending to prevent bringing what might be infectious dust and dirt into the household, tracking this into carpets or rugs, especially into rooms where young children may be playing around is during an

epidemic an important factor of prophylaxis. To avoid this, there should be outside the main living-room a broom or cloth for the shoes and one for the clothes, each person before entering, taking care to remove as thoroughly as possible the street dust from the clothes.

It is not definitely known how the infecting organism of Infantile Paralysis is transmitted. While various agencies have been accused of being the carrier, their culpability as the medium of transmission has not been proven. It is Doctor Flexner's belief that the nose and throat secretions of infected persons dry and, as dust, become potent sources of infection and that "house flies act as passive contaminators since the virus survives on the body and within the gullet of these insects." Careful clinical observation has pretty generally substantiated these theories as modes of infection. That the organism may be conveyed directly by kissing, sneezing, etc., is no longer questioned.

There is as yet no known method of aborting the affection or limiting the paralysis, although intraspinal injections of the blood of recovered persons have been administered with the hope of perfecting an anti-serum. This is, however, as yet wholly in the experimental stage.

CHAPTER XXXVII

QUARANTINE AND OTHER MEASURES AGAINST INFANTILE PARALYSIS

SIMILAR to a fire beginning in a dry forest, is epidemic Infantile Paralysis—easy to handle if discovered in time—but once gaining momentum, a terrible struggle ensues before it can be conquered. Like so many other scourges, if the world could be cleansed of poverty, ignorance, carelessness and superstition, there would be but little need to hunt down mysterious germs stopped by no filter and disclosed by no microscope. But since even the beginning of the Elysium is not yet, epidemics may be prevented only by an awakening of the public conscience as to the vital necessity of coöperation in the enforcement of health and sanitary regulations.

As to quarantine and other measures against Infantile Paralysis:

The committee on Poliomyelitis of the State and Provincial Boards of Health meeting in Washington in April, 1917, suggested certain minimum requirements for control of the disease. Among these were:

First. That an isolation period for a patient of

not less than two weeks nor more than three weeks from onset be required, unless the temperature has not returned to normal in the meantime.

Second. That children of the same household in contact with a patient be excluded from places of public assembly for a period of fourteen days from last date of contact, as determined by the health officer.

Third. That an adult of the household, if patient is properly isolated, may continue his vocation, provided it does not bring him into contact with children at any time.

When Infantile Paralysis develops (or even if it is a suspected case) call in a physician and avoid contact with other members of the family. If medical and nursing care can be given and facilities are adequate for proper isolation, the child may be cared for in the home.

The room selected should be quiet and should, if possible, adjoin a bath-room. It should be freed from excess furniture, carpets and hangings and must be efficiently screened for under no circumstances must flies or other insects have access to the patient or his excretions. If two nurses are required, two isolating rooms will be necessary, one to be used as a sleeping room. That the floor be bare is very desirable since it should be mopped every second day with carbolic solution (1-40) or at least sprinkled with some dampened material (such as sawdust) that no dust may arise when cleaning. The dusting should also be done with a dampened cloth. The necessity

for keeping dust in obedience in any infectious disease cannot be over emphasized. This inference is based upon the most fundamental teachings of bacteriology: That bacteria cling to moist surfaces, and while in a moist condition cannot be swept into the air or carried from one point to another, save by animal agents. When allowed to dry, however, as they must in dust, they may when scattered abroad, become a potent source of infection. For this reason dust should be reduced to a minimum and removed without scattering.

When arranging for isolation, some of the earliest necessities are:—

- One large foot tub for use in disinfecting the bed clothing

- One medium sized covered pail into which the water used for bathing purposes may be disinfected before being carried to the toilet

- Two wash basins, one to be used for bathing purposes, the other for cleansing the hands after caring for the patient

- One hand brush for use in cleansing the hands after contact with the sick or any of the excretions

- Several large paper bags in which may be placed gauze or other refuse for burning

- One round basin for use in washing dishes

- One mop and a small dusting basin

- A large glass bottle or some container for carbolic solution.

In addition there should be, if possible, some way of providing hot water without the necessity of going

to the kitchen. If a room can be had adjoining a bath-room, isolation can be made much simpler. The linen can then be disinfected in the bath tub and the stationary wash basins may of course, be used for cleansing the hands. Anything taken into the room should be left there, unless it may be boiled or thoroughly cleansed and exposed to the sun.

The nurses or attendants should take entire care of a child ill with Infantile Paralysis and no one else, save the physician, should be allowed in contact. When entering the room and before approaching the bed, the clothing should be protected by a long gown or an apron with sleeves. This should hang just inside the sick-room, easily accessible upon entering. It should not be worn outside the room.

Cats, dogs and all other household pets must be excluded from the sick-room.

The discharges from the mouth and nose should be received in gauze, old linen or paper handkerchiefs, deposited in a paper bag and burned at least once a day. Bowel excretions should be promptly disinfected with Chloride of Lime or other disinfectant designated by the physician. This is most important since the virus has been detected in the secretions not only of the nose and throat but of the intestines of patients suffering from either true Infantile Paralysis or the abortive type.

After handling the patient or any of the discharges, the hands should be promptly washed with hot water

and soap, using a hand brush. To be effective this must not be a perfunctory washing, but should be very thorough. The attendant should also wash the hands similarly before leaving the room and especial care should be used in cleansing the hands before going to meals.

The soiled linen should, before it is taken away, be soaked twelve hours in a 1-40 solution of carbolic acid. (See page 108, "How to Care for Infectious Diseases in the Home.") It should then be wrung from the solution, transferred to a covered pail and boiled separately from the clothes of other members of the family.

The dishes used in the sick-room should be left there. The refuse should be scraped into a paper bag and burned. If too many dishes accumulate, they may after a thorough washing in hot water be transferred to a pan which has been left at the door, taken to the kitchen, covered with cold water and boiled. After dishes have boiled for five minutes it is perfectly safe to use them.

In caring for one ill with any grade of Infantile Paralysis, it is particularly important to secure for the sick child the maximum degree of rest and quiet. The disease is really an inflammation of the spinal cord associated with more or less hemorrhage, and recovery of the spinal centers is obviously hastened by rest and quiet.

When the isolation has been terminated, the entire body of the child should be bathed and the hair washed. The child should then be wrapped in a sheet (which has not been in the sick-room) and carried to another room. The floors and woodwork of the vacated room should then be thoroughly cleaned with hot water and soap. The mattress and pillows should be brushed with a whisk broom which has been lightly dipped into carbolic solution, then spread over chairs, while the room is sunned and aired for at least twenty-four hours.

Nowhere is the old saying "Make haste slowly" more applicable than to the convalescent stage of Infantile Paralysis. The greatest danger is fatigue of the weakened or paralyzed muscles. These muscles are sick with deranged nerve and blood supply; they therefore tire easily, not only by active but also passive use,—manipulation, massage, electricity and muscle training. This needs emphasis since parents very often are led, through anxiety and the fact that much is heard of wonderful recoveries under certain treatments, to disregard doctors' instructions. It must be remembered that while massage, electricity, manipulations and muscle training, all have a place in the treatment of weakened and paralyzed muscles resulting from Infantile Paralysis, no two cases may be alike and the amount of such treatment beneficial to one may be detrimental to another. For this

reason, all such applications should be given by a trained attendant under the guidance of a physician.

The convalescent period of Infantile Paralysis extends practically over two years, that is, the greatest gain is to be made during this period.

CHAPTER XXXVIII

THE RIGHT FOOD FOR SCHOOL CHILDREN

Not long ago it was brought out through medical examinations made in fifteen cities of the United States that of 547,909 school children examined, not less than 29,019, or between five and six per cent., were not only underfed, but were suffering in health from the results of underfeeding.

School-days cover most of the growing period of a child's life. It is during this time that the constitution is established for the remainder of life. When we consider that bodily and mental growth are making their demands at the same time, that extra demands are made upon the nervous system, the metabolic changes of the body being thereby greatly increased, we can readily understand the importance of maintaining a high state of nutrition.

Furthermore, in a malnourished child the maximum physical and mental growth can not be attained. The mentality is dulled and all the normal processes of life lowered. He lacks alertness. It is difficult for him to pay attention, and there is a reduction in vitality which makes him more susceptible to disease. In

fact, a breakdown in health while at school is quite as often due to faulty nutrition as to overwork.

It is not alone the children of the poor who suffer from malnutrition, but many who are reared in homes of plenty. This being true, the natural question would be: Why are they malnourished?

Because they do not receive the right quantity and quality of food to maintain the proper standard of growth and development.

Many children hurry to school in the morning, having eaten little or no breakfast or having had breakfast at a very early hour. If a luncheon be eaten at all, often it is not adequate to supply the needs of a growing child. Then there are many parents who think they have solved the problem when they have given their children small amounts of money with which to buy luncheon. But what kind of luncheon do they buy?

Usually such things as pickles, cakes, cheap candies and other injurious and indigestible food. Moreover, this food is very often bought from push-cart venders or street stands where it has been exposed to dirt and filth, and is often dangerously adulterated. After school these children hurry home and hastily bolt a cold luncheon at two or three o'clock, which impairs their appetite for supper at six. With a régime of this kind over a long period, is it at all surprising that the child becomes malnourished?

The essentials of diet for the child are an abundance of simple, easily digested foods carefully prepared

and of sufficient variety to form a correctly balanced diet, that is, the three meals must provide in reasonably correct proportions all the important nutrients. To do this most effectively, experts of the Department of Agriculture tell us that the three meals must supply the child with sufficient food from:

1. The cereals or starchy foods:
Breads, cereal mushes, ready-to-eat cereal breakfast foods.
2. The protein rich foods:
Milk, lean meat, fish, poultry, cheese, eggs, dried beans, cowpeas, peanuts, almonds, walnuts and other nuts.
3. The fatty foods:
Butter, cream, bacon, salad-oils.
4. Fresh vegetables and fruits:
Potatoes, greens, lettuce, asparagus, green peas, beans and all kinds of fruits either raw or cooked.
5. Simple sweets:
Cakes and cookies, not made of rich ingredients, plain candies, honey, preserved fruits and simple desserts.

It is seldom possible to provide at one meal all the materials necessary for the growing body, so what is omitted in one meal should be supplied by one of the other meals.

The school child should, as a rule, have his breakfast at seven-thirty, so that he may never be obliged to

hurry in eating in order to be in time. Of course, with children in rural districts, where it is necessary to drive long distances, breakfast must be earlier. The mother should in all cases take care that it is a substantial meal.

An ideal diet schedule, taking in all the principal food constituents, varied from day to day, would be:
Breakfast, 7:30:

Fruit, well-cooked cereal eaten with cream and sugar, egg, soft-boiled or poached, bread and butter, ten ounces of milk.

The quality of the bread is extremely important; its crust should be crisp and deep, indicating long cooking.

Dinner, 12:30:

Soup; well-cooked vegetables (green vegetables are particularly desirable, as they contain large quantities of iron); meat, either steak, lamb chops, beef or chicken; bread and butter. This is a wholesome meal.

Dessert: Custard, stewed prunes, stewed apples, baked apple, rice-pudding or plain bread-pudding. Ten ounces of milk. Milk may be omitted if used in any other form, such as in soup, milk toast or cocoa.

Supper, 6:30:

Cold meat or fish, eggs in almost any style except hard boiled or fried; bread and butter; cooked fruit, plain cake, ten ounces of milk.

Milk should never be entirely omitted from the diet of a school child. Not only is it rich in mineral matters used in developing bone, but it contains many nourishing substances in forms easily assimilated; furthermore, milk promotes growth in childhood by helping the body to utilize other foods.

Since there are so many foods that can not be packed, the contents of the lunch-basket become necessarily limited. Sandwiches, being easily packed, are the real foundation of the school lunch, but care must be taken to vary them from time to time in order that the child's appetite may not become jaded.

Fruits, such as dates, figs, raisins, or nuts may be chopped and added to buttered bread. Lettuce with a couple of slices of crisp bacon makes a delicious sandwich. A liberal spreading of peanut butter with several slices of some tart raw fruit between the slices will be enjoyed. Cream cheese may be mixed with chopped English walnuts and spread on crackers. Honey mixed with cream cheese is especially nice as a filling for crisp biscuits. Meat may be chopped and moistened with salad dressing.

Then there is the ever-ready jam and jelly. Brown-sugar and maple-sugar sandwiches, as well as other simple sweets, should also occasionally find a place in the lunch-basket. Sandwiches for the lunch-basket should be supplied with a liberal allowance of butter, as this is an important source of energy for the active child.

The schoolchild's appetite for bread may be stimulated by changing the bread from day to day.

Sandwiches should be carefully wrapped in paraffin paper. It is better not to wrap more than two together.

Any soft or liquid foods should be carefully packed in small jars with screw tops, glasses with tops or in paper cups.

Of course fresh, ripe fruits have an important place in the school lunch, not only because they are convenient to carry, but because they are needed in the diet of every child.

As things eaten raw are likely to transmit germs, care should be taken to wash all fruit thoroughly.

Fruits with skins, such as grapes, peaches, pears or plums, are not injured by dipping them into boiling water for a few seconds, while bananas, apples and oranges may be washed with soap and water.

Last, but not least, remember that many a good lunch is spoiled by careless packing.

CHAPTER XXXIX

BRAIN-FAG IN SCHOOL CHILDREN

Not long ago a mother presented her boy of about thirteen years at a busy doctor's office for an examination. "Of what does he complain?" said the physician.

"He does not complain at all," said the mother.

"Then of what do you complain?" the doctor smilingly asked.

"Doctor," said the mother, "I have brought John to see you on what you may call a foolish errand. Nevertheless, it is something that has worried me for a long time. John, from earliest childhood has always had a wonderful disposition, but for the last six months I have noticed that he is particularly irritable and cross and I have come to the conclusion that he must be sick in spite of his insistence that he is all right."

"An acid disposition," mused the physician. Then to the mother he said: "Very studious, is he not?"

"Oh, yes!" she replied, "John is always at his books."

The doctor studied the boy for a few minutes, then turning to the mother said: "You must take him out of school for a time; there are unmistakable signs of a fagged and overworked brain."

Undoubtedly many children are kept at school who ought to be under the care of a physician, because parents and teachers have not noticed the symptoms indicating a fagged brain, which after all really means that the youthful nervous system is being injured.

Great effort has been directed toward preventive medicine, but there is one branch of it which has been more or less neglected. We have failed to appreciate the fact that all children who come into the schools for education are not alike. We have not thoroughly realized that countless thousands not only come into the world constitutionally inefficient, but they are afterward handicapped by environment and training.

There is no gainsaying the fact that many a breakdown, either permanent or temporary, could have been averted, had the child been treated a little more individually while in school, and if parents had considered the child and his make up before urging him forward.

A teacher may have a class of thirty pupils; ten of these children may be able to accomplish the prescribed work with ease, but to hold the other twenty strictly to the same work may be, and very often is, the beginning of serious nervous trouble.

The insane population of the United States, who have been committed to institutions, is estimated at two hundred thousand, with as many more outside of institutions. A few years ago many of these were children enrolled in the schools, and while we can not attribute this condition to their school work alone,

as many of them undoubtedly inherited abnormal tendencies, it is certainly possible that many could have been saved from this sad fate, if they had been treated and looked after while they were school children.

"At least five per cent. of our school children are neurotics in the sense that they are more than ordinarily predisposed to the development of mental 'complexes' unfavorable to the healthy and coordinated functioning of intellect, emotions and will," says Mr. Lewis M. Terman, Associate Professor of Education, Leland Stanford Junior University.

Some years ago an investigator on this subject sent out a set of questionnaires to teachers. Out of one hundred and sixteen answers fifty-nine sad cases of prostration from overwork among children were reported.

It is hard to realize how quickly the mental forces of the growing girl and boy become fagged.

As the child passes from one stage to another, from infancy to childhood, and from childhood to adolescence, the brain, which is really an aggregation of nerve centers, is not only growing but new parts are forming; impressions are constantly received and these effect results in building up its structure and organization, but since the child's reserve of energy is small he is quickly brought to exhaustion. Furthermore, if the demands made upon the nervous system involve those parts which are still undeveloped there is danger of serious injury to this delicate structure.

For instance, it is possible to force a child to accomplish physical work for which he is unfitted, but what is the result? His growth is stunted. So it is with the growing and developing nervous system.

We do not permit our little children to overwork, even in play; we instantly recognize and control the situation, but when it comes to mental work we rather encourage them to go on and on, hardly realizing that it can be overdone.

We must not forget that mental work makes as great a demand upon the body organs as physical work and that it creates even more fatigue; that when the brain has become fagged, important functions of our organs, such as the heart and kidneys, are also affected.

There have been many investigations to prove that work done by school children under the strain of oncoming fatigue is of hardly any value and that children should not be held to their work after positive signs of fatigue have shown themselves. The Russian psychiatrist, J. Sikorski, was the first to make an endeavor to measure fatigue and its relation to accuracy in the work of school children.

The tests employed were considerable amounts of work, the pupils writing from dictation for one-quarter of an hour early in the day before school work began and later in the day after school work was over. He found thirty-three per cent. more errors in the work done after school was over.

It should always be borne in mind that what a child accomplishes or masters does not depend altogether on how long or how hard he works; it depends more upon whether he is working at the maximum of his power and whether or not his mental faculties are clogged as a result of fatigue.

Some European countries, notably Switzerland, and some states in our own country have realized that time is no measure of progress in the schoolroom, and have enacted laws against home study for all children below the high-school period. The vital question, many educators claim, is to teach children how to study, in order that energy may not be wasted in misguided efforts.

"The mind instead of being, as was once supposed, like the old-fashioned sensitized plate of photography, which required long exposure, is, after all, more like the highly sensitized plate of the snap-shot—not long exposure but right conditions," says one writer on the subject.

Early in the morning is the best working period and ten minutes of concentrated vigorous effort is worth ten times ten after the mental faculties have become fagged, for mental digestion as well as physical, depends largely upon a proper and timely food supply.

It is thought by many that fatigue brought on by long hours of mental work is a real accessory to lateral curvature of the spine and other irregularities of posture. The muscles controlling posture are held tight

by a regular and unconscious outflow of stimulus from the nerve centers.

Now when children become tired they naturally assume awkward positions because it requires nervous energy to sit erect.

Mental work for young children should be in short periods and should alternate with short periods of rest; they should be allowed much freedom of movement, and home study should not be required of them. When out of school they should be urged to muscular activity in the open air, for not only is play one of the most potent means of reducing the fatigue of the school-room to a minimum but it has other missions.

Children are very prone to anæmia and their resistance to disease is inferior; muscular activity stimulates the flow of lymph and the circulation of the blood and as this plays a large part in a child's nutrition and resistance to disease, it can readily be seen that sedentary habits are particularly injurious.

One of the first signs of mental fatigue in children is inattention and lack of power to concentrate. Now why is this?

Because it is a law of Nature to accumulate a reserve of energy, both mental and physical, which surplus is not drawn upon except under great provocation and at times of unusual stress.

Inattention has been designed by Nature as a sort of safety valve that these deeper levels of energy may be protected; in other words, that they may not be

drawn upon too completely; inattention has, therefore, a positive function; it is a warning that the child needs recreation in order that the poisons produced by fatigue may be expelled from the blood.

There are a series of signs and symptoms of brain-fag occurring among school children of all ages; these are sometimes slight, sometimes quite outspoken, but parents and teachers often fail to interpret their significance.

Some of these symptoms as mentioned by physicians are:

A restless wandering of the eyes, compression of the lips, protruding of the tongue with each new effort, extreme irritability, indigestion, general tired feeling, stumbling over words when speaking, substitution of one word for another, or extreme forgetfulness; that is, you may tell the child to bring you an article from the next room, but before he is able to do so, he has forgotten what it is you told him.

These symptoms are very mild, but others more pronounced may show themselves, such as:

Involuntary muscular twitchings of the hands, face or eyes, frowns or grimaces unconsciously made, asymmetry of posture, unequal movements of the two sides of the body; the arms when extended may not be on the same level.

Mistakes in writing or bad or shaky handwriting may not always be due to poor scholarship; they may be due to nerve fatigue. Sleepiness, headache, and loss

of memory among students are unmistakable signs of mental fatigue.

The danger from brain-fag is especially significant in the upper grammar-school grades and in the early high-school period, when one is passing from childhood into adolescence and when the intellectual and emotional life are somewhat loosely joined.

Most emphatically does this apply to the adolescent girl. We see her so often. She was perfectly well up to thirteen or fourteen. But now she is pale and languid, often irritable and usually in a feverish state of excitement; we note her nervous laughter, her shortness of breath after exertion and her asymmetry of posture; we note her constant complaint of indigestion, headache, and tired feeling. She is just entering high school, an increased mental demand is made upon her and much nervous energy is wasted worrying over examinations at stated periods, also her interest in social life is just beginning to be stimulated.

All these demands for nervous energy together with the added requirements of growth are very apt to be more than the organism can supply, particularly if the girl is not unusually robust and strong.

Parents and teachers should be extremely careful to keep in mind the tendency to anæmia and nervous affections during the state of adolescence, and also that many nervous and mental breakdowns occur among both girls and boys during this period.

When languor presents itself, mental work should

cease, for all effort after this is a strain upon the nerves. The aim should always be to have a surplus of nervous energy, what Emerson calls "plus health."

While the amount of mental work the student can do is a matter of individuality, when danger-signals present themselves, even in a moderate degree, they should not be disregarded, but the hours of work should be shortened.

Those who are inclined to be nervous should be as free as possible from excitement and irregularity; should have plenty of nutritious food, much exercise in the open air and an abundance of sleep.

While eight hours of sleep is considered the minimum for the maintenance of health under ordinary conditions, this amount is not sufficient for the young brain-worker.

Mental work should not be required on Saturday and Sunday, but a large part of this time should be used for diversion and recreation in order that the fatigue products accumulated during the week may be expelled from the system and that the overworked nerve cells in the brain may have time to recuperate.

"All work and no play makes Jack a dull boy," has become a trite saying, but after all it is a real physiological dictum. For while that force generated in the human brain is the most precious in the world, to waste it or cause others to do so is to sin against all for which human energy and vigor stand, for "knowledge without health can not profit us."

CHAPTER XL

CULTIVATING THE SPEAKING VOICE

ALL of us have at some time been delighted and charmed by a beautiful speaking voice; all of us have more often been repelled by a harsh mechanical voice. How often one fails to make the desired impression, succeeding only in tiring the listener because of indistinct articulation or fatiguing resonance of the voice.

The influence of the speaking voice in all the relations of life, business, social or domestic, cannot be estimated. It may have a calming or irritating influence. And in our daily concourse the ability to deliver words clearly in a pleasing voice, inspires toward us not only a better understanding from others, but a better feeling. That a good voice is an economic asset business men thoroughly appreciate, many of them refusing today to employ those suffering from any defect of speech.

That the voice should be cultivated collaterally with the culture of words, the spoken word and vocal tone growing up together, even from the standpoint of health, is no longer doubted. For not only may a voice have a good or bad reflex action upon its posses-

sor, but by the true use of voice, tuberculosis in many with the tendency could be successfully warded off.

It is plain that childhood is the time when the foundation is laid for the acquisition of correct speech and a pleasing speaking voice. Even a baby will listen intently and turn instantly at the sound of an unusual voice.

The Hawaiian children learn to sing as readily as they learn to talk merely by listening to their parents singing all day at their work. Parents may, by means of a little care and the application of a few principles do more and with far better results than it is possible for a teacher to accomplish at a later date.

The great aim should be not to allow the high pitched tone, nasal twang, whine or other imperfections to fix themselves in childhood. For their growth is so subtle and so deep, the work of correction in later life is apt to be slow and arduous. Many defects and anomalies are acquired chiefly by imitation. In lisping the influence of imitation is generally admitted to be very important. Recently a physician reported having observed this speech defect in five children in one family. It had been acquired from a lisping maid. The unconscious observation of a child is very keen, so if those who surround him have linguistic defects, he may develop similar ones. In a very young child a defect of speech may appear to be attractive,

but if allowed to go on, it can be overcome only with great difficulty if at all. And now where is the beginning?

First, the parents must establish an ideal. That is, they must know what constitutes a beautiful mode of speaking; they must learn to distinguish good sounds in speech from bad sounds and accustom their children to hearing good speaking voices. Close attention to the language of others who speak better than we will help immensely in cultivating the ear to the appreciation of vocal charm. By studying the voice that pleases and endeavoring to imitate it much may be accomplished, since the imitative power of the vocal cords is unlimited. While at first, when trying to acquire a quality that pleases, a conscious effort is required, this soon falls into the realm of the unconscious. In other words, what was at first a conscious effort soon becomes a habit. In what does a beautiful mode of speaking consist?

The quality which we would place at the top is modulation—a voice always under control, one so disciplined as never to be irritating to the nerves or to the ear of good taste. With this there should be a natural, easy utterance, clear and distinct, carrying a full and vital expression, and having rather than a wide range of sound, beauty of tone. These are the essential qualities that make for good speaking. While they cannot all be acquired at once, parents should have them fixed in mind as a goal to be reached by their

children. And now having established an ideal of good speech, how shall we begin to work toward it?

There are three physical essentials for the cultivation of a pleasing speaking voice:—

Good teeth

A non-constricted, clear and open throat

Nasal cavities free from obstruction.

The child's teeth should always have the best of care, for by their neglect and subsequent deformity, the utterance may be spoiled.

The muscles of the throat should be allowed freedom of action, that is, they should not be constricted by high or tight collars, and there should be no obstruction such as excessively enlarged tonsils would cause.

In perfect speech the principal sounds issue from the mouth, but they must be strengthened by the resonance of the nasal cavities. This resonance cannot be properly given, if in the nasal passages there is any interference such as adenoid growths or spurs of bone. Always, too, the general health must be taken into consideration. For whatever pertains to physical health immediately affects the voice. With the bodily health at low ebb it is simply impossible to have a clear and sustained tone. This is also true where the posture is poor and the breathing incorrect.

And now as to fundamental training.

First, we believe that parents should recognize and endeavor to eradicate in early life the nasal tendency,

the tendency to whine or the tone pitched too high just as quickly as they correct faulty pronunciation or grammatical construction. For it should be remembered always that the habits of speech which the child is acquiring will be the vocal habits of the adult.

In a general way, the study of voice culture is divided into two parts—correct breathing, articulation and pronunciation. If given half a chance, that is, if the child is taught to stand and sit erect, nature will attend to the breath supply so far as ordinary speaking is concerned. If, however, the child's voice is thin, feeble or shrill, it means incorrect breathing. To correct this, teach the child to breathe deeply, that is, to breathe from the diaphragm (the muscle between the chest and abdomen). This means breathing from the bottom of the chest instead of from the top. While one breathes without being consciously aware of it, the art of deep breathing has to be acquired by practice. When practising deep breathing have the child stand in a well poised position.

The feet should be slightly apart, toes pointing straight ahead, weight equally distributed between the feet. The hips should be straight, stomach drawn in (not evidencing effort) but showing the result of correct hip and chest posture. The chest should be held high with the chin lifted but not tilted. The shoulders should be dropped downwards, not forced back, as they will be back if the chest is high. In this position tell the child to fill the lungs (to inhale)

and to try before expiration to make a slow mental count of five, exhaling sometimes explosively and sometimes slowly and steadily. If this is done regularly for a few minutes each day, little by little the lungs will dilate and one will unconsciously increase the length of the inspirations and the slowness with which the air is expelled, until gradually the count may be increased to ten or fifteen. While as we have said, breathing may be thoroughly unconscious in ordinary speaking, there are some qualities, not the least of which is resonance (that quality which sustains tone) that cannot be acquired without proper breath control. To be assured that resonance and carrying power are accomplished by control of respiration, one need only notice the singer who has developed vocal ability or the actress who has attained mastery of speech. What do they do?

They breathe deeply, thus securing the proper voice support.

It is by means of the articulating muscles that the organs of speech change their relative positions and assume the attitudes necessary for the formation of the vowel and consonant sounds. And in training for a correct speaking voice these muscles must be brought into play and one must learn to form consciously and correctly the many vowel and consonant sounds. The vowel sounds are the most difficult because they are what may be called open-mouth sounds. They must be made with an open throat, mouth, teeth and lips.

For vowel sounds, see page 241, "The Child's Speech."

Repeat the scale down and up until you are conscious of the changes in adjustment of the speech organs and try to associate each sound with its position. Practice this scale slowly at first, then increase the speed, keeping each sound separate and distinct. Go over it frequently until the correct habit of producing each sound is fixed. Care should be taken that the sounds are not nasal and no great muscular effort should be made. This effort is one of the major causes of throat contraction and "throaty voice." The child should also be drilled in repeating aloud the alphabet, making sure that every letter is pronounced not only distinctly but is given the correct sound. For instance, that the letter *h* is never pronounced as though it were aitch and the letter *w* not as "double yer." In going over the alphabet see that the child brings out every letter vigorously and concisely. Do not allow him to drawl the letters. Remember that the drawl is not only very apt to result in the habit of whining, but that concise and spirited expression has a stimulating effect upon the mind. In other words, it marks for the child a step toward health.

In meeting the difficulty of pronouncing a difficult word do not allow the child to try to say it all in one breath, thus getting the syllables mixed. Teach him to pronounce it syllable after syllable, pausing after each effort and then going quietly on.

Smooth, rippling, happy poems, repeated in the right

tone, either from memory or as reading exercises, will not only aid in acquiring effective modulation but will help to beautify the notes.

The faculty of taking pains and a little practice with the child every day will work wonders toward acquiring a beautiful speaking voice which will soon become a habit. Let us not hesitate to take these pains, remembering always that we cannot, like a dress to be put on in the evening, have two kinds of speech, but that the child's every-day habits will mark the adult's speech habits and that beautiful speech is a mark of true culture.

CHAPTER XLI

SICKNESS IN THE FAMILY—SMALL BUT INVALUABLE HELPS

EVERY mother should understand how to prepare and apply such applications as a physician may order for home treatment. She should also know something of the effect they are supposed to produce. For even with the simplest remedy, unless properly carried out, much of its effect is lost.

Not long ago I met a mother who with her child had come some distance to consult a physician. The doctor after an examination advised the mother to take the child home and apply hot fomentations.

It was clear from the expression on this mother's face, that she had only a vague idea of how to carry out the instruction. "Do you understand how to apply the hot applications?" I asked.

"Not exactly," she answered, "but I have a neighbor who seems to understand such things, perhaps I can find out from her."

Hot fomentations and hot poultices are usually ordered for localized or deep-seated pain, when the pain is caused by inflammation. The heat by dilating the superficial blood vessels draws the blood from the con-

gested area, relieves the pain and promotes suppuration.

For Hot Fomentations: The most effectual way is to have two compresses of the required size and apply them alternately. Squares cut from an old bath towel are excellent for this purpose since this material seems to hold heat even longer than flannel. The water should be *not just hot but boiling*. Place the compress in the center of a towel and dip into the boiling water. Wring by twisting the ends of the towel. Now give the compress a quick shake and apply over the affected area, covering at once with oil muslin or oil paper. If possible wrap a bandage or a towel around the part to aid in keeping in the heat. Hot fomentations are usually changed at least every twenty minutes.

For a Poultice: Any non-irritating substance, capable of holding and conveying moist heat, is efficacious.

The flax seed (linseed) poultice, since it combines these two qualities is the one most generally used.

To Make a Flax Seed Poultice: Stir the meal slowly and evenly into water while it is boiling. When almost thick enough, boil about a minute longer, stirring constantly. Now remove the mixture to a low flame and beat thoroughly. This beating is done for two purposes. To remove all lumps and incorporate into it a certain amount of air. When properly made, the poultice should be perfectly smooth and of

a consistency just stiff enough to drop away from the spoon. It should now be spread about one-half inch thick on a piece of muslin of the required size and shape. This material should be large enough to fold over the poultice once, allowing for a margin to be turned in all around of at least one-half inch. On the side to go next the skin, apply vaseline. And over this put a thin layer of cheese cloth or gauze cut large enough to turn back over the top. The poultice is now ready to be applied. It should be carried to the bedside on a hot plate covered with a towel and should be as hot as can be borne but not hot enough to burn. When in place cover the poultice with a layer of cotton and to prevent the escape of heat and moisture apply a piece of oil silk. If oil silk is not at hand, lay over it a piece of hot flannel. Hold all in place by pinning around the part a bandage or towel.

A poultice should always be removed before it has become cold but the fresh one should be ready to apply before the old one is removed. Before making the fresh application the skin should be wiped dry. Do not attempt to reheat and apply a poultice which has once been used. It will serve no purpose.

To Make a Starch Poultice: Sometimes when there is skin irritation, on account of its soothing properties, a starch poultice is ordered. To make this:

Mix the starch first with a little cold water, then add boiling water until it becomes the consistency of thick paste. Now spread on muslin covering only with a

layer of thin gauze. In this way the starch is allowed to come in direct contact with the skin.

Cold Applications: When conditions are such as to contra-indicate hot applications, cold is applied. This is usually done by means of an ice cap or by cold compresses. When properly filled, an ice cap should be free from air, light and dry. The ice should be broken into fine pieces, filling the cap not more than one-half full. Before screwing on the top, in order to expel the air, place on a flat surface. Now wipe dry and to prevent the rubber and the extreme cold from coming next to the skin, tie around the cap an old handkerchief or a piece of gauze.

The weight of an ice cap as an objectionable feature can be entirely eliminated by tying around its neck a bandage and pinning the two ends high enough on the pillow to barely allow the cap to touch the head.

For Cold Compresses: Put a small piece of ice in a basin, adding a little water. Fold two old handkerchiefs or soft gauze two or three thicknesses, making them narrow enough not to wet the hair or come down over the eyes. If gauze is used, avoid ravelings by turning in the ends. While one compress is being used the other should be kept on ice. Compresses should not be made wet enough to drip. To prevent irritation a little vaseline may be rubbed on the skin.

If for the eyes, the compress should be small and very light. If only one eye is affected, be careful not to infect the other by contact.

Mustard Plasters: It is by virtue of the irritating effect of the mustard on the sensory nerves that a mustard plaster relieves pain. The superficial blood vessels under the point of application are dilated, thus causing a lessening of congestion.

For young children a mustard paste is usually ordered in strength of one to six, or one to eight. This means one part powdered mustard and six or eight parts of flour. Use tepid water and make into a paste free from lumps. Hot water since it has a tendency to lessen the strength of the volatile substance which gives mustard its irritating qualities should not be used in the mixing.

The paste should be spread on old linen of the required size, allowing enough material to turn over once and a margin for turning in the edges. The plaster should now be placed on a hot plate and carried to the bedside. Before applying, the surface of the skin should be well greased with vaseline. When in place cover with a layer of cotton. With children the skin is usually sufficiently red after an application of a few minutes. Always watch carefully for if left on too long the skin will blister. For adults the paste is made much stronger and left on longer, usually from ten to twenty minutes.

After the mustard plaster has been removed wash the skin carefully and reapply a little vaseline. In case of over-irritation, apply a layer of cotton so as to exclude the air.

Mustard Foot-Bath: The object of a hot mustard foot-bath is to dilate the blood vessels of the extremities, bring more blood to the parts and thus equalize the circulation. To properly give this:—

Put the child to bed. Half fill a small foot-tub with water at a temperature of 115 degrees. The mustard should be in the proportion of an even teaspoonful to each quart of water. Before adding to the water it should either be tied in gauze or made into a paste. After protecting the bed by a mackintosh (covered with a towel), place the foot-tub on the bed and by bending the limbs at the knees allow the child's feet to rest in the water. The duration of the bath should be fifteen minutes. During this time by the addition of hot water from time to time maintain the temperature at 115 degrees or more. Always use extreme care, when adding water, not to allow it to come in contact with the child's extremities. Throughout the bath the knees and the foot-tub should be kept covered with a blanket. At the end of the required time gently wipe the feet and tuck the child warmly into bed.

How to Give An Enema: For a simple enema to relieve constipation make a suds of warm water and castile soap, pouring one pint of this solution into the bag of a fountain syringe. Then while sitting on a low chair, place over the lap a rubber sheet (covered with a large bath towel) letting this form a trough into a foot tub. Take the baby on the lap, allowing

him to lie upon the left side with the legs well drawn up. Now oil the black rubber tip of the syringe and with the right hand introduce it gently into the anus. Then while holding the tube with the left hand, allow the solution to flow in slowly. The bag of the syringe should hang about two feet above the baby's head. After the tip of the syringe has been removed, in order that the baby may retain the enema for a few minutes, apply pressure at the anus with a folded towel.

Bowel Irrigation: A bowel irrigation is frequently given during an attack of diarrhoea, especially if the stools contain blood or mucus. In giving an irrigation the baby should be held in the same position as for an enema, but in place of the hard rubber nozzle, a soft rubber English catheter (size about 14) should be used. This is attached to the fountain syringe by means of a glass connecting tube. The tip of the catheter which has been well oiled should be held in the right hand and inserted as gently as possible upward and slightly backward, (following the natural curve of the rectum) a distance of two and a half to three inches. Hold the tube in place with the left hand and with the bag elevated from two to three feet above the head of the baby, allow the water to flow in slowly. If any resistance is felt the tube should be removed. Never force the tube in giving either an enema or an irrigation.

Attention to the little things that may seem unimportant, not only add to the comfort of the one receiving the treatment, but, more important, they have a great effect upon the ultimate result.

CHAPTER XLII

PALATE TICKLERS FOR THE LITTLE SICK-A-BED

Nowhere is the truth of Solomon's assertion "a merry heart doeth good like a medicine" more clearly vindicated than in bringing back to the borderland of health the lagging appetite of the little convalescent. In seeking to stimulate the appetite of a child it is not so much the food we put before him as the appeal we make to his imagination.

Said an ingenious nurse to a little Pale Face whom she had been unsuccessfully coaxing to eat: "Next time I will bring some animals to help you eat the food." The little child smiled wanly. But he was interested as shown by a later question:

"Where are you going to get the animals who will help me eat?"

"Oh! I will telephone the Zoo," said the nurse.

When at last the napkin was lifted from the tray there was a cry of delight. For there in each corner of the tray was a circus sandwich—the elephant, the camel, the lion and monkey—all standing guard over the food. "Now," began the nurse, "they are all hungry animals, for none of them have had dinner." Then she began to tell of some of their circus feats,

of how they lived and what they ate. The effect was all she had hoped. For at last came the cry: "I did not leave any for the big elephant, he will have to wait until next time."

To Make the Circus Sandwiches: Cut tiny squares of brown bread. Put them together with a filling of chopped dates and cream. Then on top of each sandwich put a little frosting, affixing to this before it has hardened, an animal cracker in the upright position.

The goblin sandwich will also prove interesting. Slice bread quite thin and trim so the slices will be much longer than they are wide. Spread with butter and jelly, then roll like a jelly-roll cake. Now take a large round, red radish and after cutting a mouth and two eyes, fasten by means of a tooth pick, to one end of the roll. For a tail add to the other end of the sandwich a long narrow radish. Then on either side place two tooth picks to represent legs.

The wish sandwich will also prove diverting. Cut brown bread into the shape of a horse-shoe and after some filling has been applied, place it—filling side down—on a piece of white buttered bread. With this the child may make a wish as he takes the first bite.

Liquids may be served from a bottle concealed by a long flowing robe of tissue paper, using for the stopper a paper-doll head. Thus may the child have "Miss Dolly Madison" as a dinner guest. He might also receive a note to this effect.

Sometimes children tire so of milk, difficulty is experienced in persuading them to take it. Milk can be quite successfully disguised by adding a teaspoonful of cocoa paste and calling it liquid ice cream.

The cereal of which the child has grown tired will take on a new interest if served in a glass dish at the bottom of which is a big red or green marble. The color of the marble will reflect on the under surface of the dish. This will excite the child's curiosity which cannot be satisfied until he has disposed of the contents of the bowl. Cereal may be somewhat disguised by stirring in a few soft cooked prunes or dates.

Even the commonplace crackers, will take on a jaunty party air if tied in pairs with different bright colored ribbons and piled in a rainbow heap, allowing the child to choose his color.

A dainty basket may be fashioned from an orange. Cut away one quarter of the orange on either side, leaving a strip for the handle. By means of a pair of scissors notch the margin of the basket and both sides of the handle and tie the handle with a pretty ribbon. The meat from the sections taken from the sides can be piled on the basket after it has been completed.

By keeping the basket in cold water it may be used several times. It is quite effective when filled with strawberries, orange jelly or other dainties.

Then the orange may be served as plain Black Eyed

Susan. For this: Pull from the orange both the yellow and white rinds and with a sharp knife cut between the sections. On a white dish arrange the sections in wheel-spoke fashion, leaving an open space in the center. Fill in the open space with a prune or two, cooked until tender and chopped into small pieces.

The egg with which the child has grown too familiar, may, if his imagination is awakened, again be relished.

First, there is the Bird's Nest. To make this:—

Cut a slice of bread a little thicker than for ordinary toast. After it has been toasted cut from its center a good sized square, leaving at the bottom just a thin layer of crust. Separate an egg and after beating stiff the white, drop it into the hollow place made in the toast, afterwards slipping into the center of the white the unbroken yolk. Place in the oven until the white of the egg is nicely browned.

Then, the poached egg after it has been placed on the toast may be surrounded by a log cabin, made by piling up sticks of toast, one on the other, four square.

The egg to be soft boiled may, before it is dropped into the water, have a grotesque face sketched on by means of a soft pencil. Thus may Humpty Dumpty make his appearance.

Sometimes a fascinating name given to a familiar dish, will arouse the child's imagination and make the food most welcome.

Among these are:—

Little Pigs in Blankets, Tom Thumb and Blind Billy.

For Little Pigs in Blankets: Select a few large plump oysters and wash each one so as to avoid any little pieces of shell. By means of a tooth-pick skewer around each oyster a thin slice of bacon. Crisp in a hot oven and serve on rounds of toast.

For Tom Thumb: Break an egg into a buttered dish, stir in two tablespoonfuls of milk, and season well with salt, pepper and chopped parsley. Cover this with grated cheese and bread crumbs. Place little dots of butter here and there over the top and bake in a quick oven until the egg is well set.

For Blind Billy: Remove from a turkey or other large fowl the drum stick. Let this simmer slowly until the bone can be easily withdrawn. After tying the smaller end securely with heavy thread, stuff the cavity with some well seasoned vegetable and hold the other end together by means of tooth-picks. Around this now roll a slice of bacon, place on a square of toast and allow it to broil in the oven for a few minutes.

The number of fascinating ways in which desserts may be fixed are legion.

Gelatin may be served in a boat shaped from the skin of a banana and lined with white paper, using tooth-picks for oars.

Then there is the Log Cabin Snow Drift. For this:—

Cut cake into narrow strips, four or five inches long. Pile these one on the other four square, filling the center either with white of egg beaten stiff and sweetened or with whipped cream.

Blanc-mange or junket may be served in colored egg-shells. Save the shells intact by pouring the egg out through a hole made in the small end. Fill the shells with cold water and color by means of colored pencils. While the blanc-mange or junket is still warm pour into the shells. After it has cooled and hardened the child may be allowed to peel off the shell, revealing the dessert in the shape of an egg, or he may eat it from the shell.

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CHAPTER XLIII

PLAY FOR LITTLE INVALIDS

EVERY mother and nurse who has had the care of a child during the trying period of convalescence knows that the time is sure to come when he will want something new.

First among the things which hold a child's interest is story-telling. A tale well told will hold his attention much better than if read from a book, as the telling makes it more real to him. He can be interested for a long time by making up a story in which he has to take part. As a beginning, let him guess the name of all the animals he can think of whose names begin with "A," then "B," and so on. Then tell him a story about some of those animals. The story can be very simple, and yet in connection with the guessing will interest the child.

If one can contrive to keep a child busy and interested without allowing him to become overtired, then the battle is won. That means always that new things must be brought forward when the old ones begin to pall.

Stringing beads and making them into chains and bracelets will always amuse him for a while.

I know a child who spent several happy days playing with colored modeling wax. He rolled it out with a small rolling-pin, stuck toothpicks along for trolley-poles and strung them with heavy cotton. A bed-roller was his trolley-car and a toothpick held in place by a little of the wax was his trolley-pole.

Many children will find delight in handling different-colored papers and combining the colors; also in pasting pictures and post-cards into a scrap-book. A scrap-book can easily be made by folding old window-shades and sewing them into booklets.

Seed catalogs and magazines with pictures of flowers can also be used. Have the child cut these out neatly and paste them in a circle on a piece of heavy paper, thus making a wreath with which the wall may be decorated.

Uncolored pictures found in magazines and a box of crayons will while away the time pleasantly.

From the colored covers of magazines picture puzzles may be made. After mounting these on cardboard, cut them into irregular pieces, which the child can reconstruct. The smaller the child the larger the pieces of the puzzles should be cut.

Simple map-tracing, by means of thin paper and the transparent slate, with its simple pictures will also find its place.

A little girl domestically inclined may play house-keeping. Supply her with a cardboard box and a furniture catalog. The lid of the box may be used for

partitioning the rooms. Then after cutting out the furniture she can place it in the different rooms. By making slits in the box the furniture may be inserted so it will stand upright.

Folding a paper several times, cutting a figure to resemble a man, thus making row after row of soldiers, is always a source of unfailing interest to a boy.

If the child is well enough, blowing soap-bubbles is always a joy.

Beautiful colors made by hanging a string of glass prisms in a sunny window are a source of delight.

If it is not too much excitement for him, a little boy will have great fun shooting tin soldiers from the foot of his bed with a harmless pop-gun.

A performing circus will amuse him immensely. Draw or trace on a sheet of thin paper some pictures of birds and butterflies. Have the child color their wings with colored pencils and cut each one out separately. Then from some illustrated magazine cut pictures of animals and place these with the birds and butterflies on a flat, dry surface. Now hold a rather heavy piece of wrapping-paper before the fire until it is quite hot (care being taken not to scorch), after which rub it several times in the same direction over a woolen sleeve.

Quickly transfer this paper to the waiting menagerie, holding it flat over the pictures, meantime gently raising and lowering it. Some of the animals will curl up and tumble over on their sides or stand on their

heads, while the little birds and butterflies will fly up and down, often perching themselves on top of the magic paper. When the animals tire of performing, rehearse the paper.

Another interesting game can be arranged by securing from the drug-store some hollow straws, such as are used with soft drinks. After cutting them into odd short lengths, pile them on the back of a book and cover with a small flag. Then by placing a hat-pin in one end, remove the straws one by one. Each player has a turn, but if the flag falls off the book his turn is ended. The one having the largest number of straws wins.

Imaginary "Hide-and-Seek" will also be enjoyed. Close your eyes and tell the child to make-believe-hide somewhere in the room. Then you begin to guess: "In the closet?" "No; you are cold." "Behind the door?" "No; still cold"; and thus you guess until you strike it right.

Never allow a child to play until he becomes tired or over-excited. Always see that he is fixed comfortably in bed before arranging any amusement. When sitting up in bed see that his back is well supported by pillows and that a soft pillow is tucked under the knees. This will relieve the tension of the leg muscles. If the regular invalid's table is not at hand, a sewing lap-board held in place by books makes a good substitute.

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